

FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.

The New Daily Mail Prizes.

The *Daily Mail* has again come forward with a munificent money prize to encourage aviation. This time they have chosen, and very properly chosen, the waterplane as the machine for especial notice. When the waterplane first made itself apparent as a type of aeroplane with great potentialities, particularly for Britain, the *Daily Mail* seized an early opportunity of organising a series of flights around the coast that showed many people who might never otherwise have had an idea of the difference between a waterplane and a land flyer just what was the nature of that distinction. Now this same enterprising journal has offered a prize of £5,000 for whosoever shall first fly round Great Britain within 72 consecutive hours without alighting on land. There is another prize of £10,000 for the first across the Atlantic in the same time limit.

The offers are as sensational in their way as was the London-Manchester flight prize at the time it was first offered. We shall be interested to see, however, whether the contemporary Press that deemed that occasion so

appropriate for satire will be so ready to commit themselves to similar doubting pleasantries on this occasion.

The first of these prizes should be won fairly soon, for there is not the same obvious risk in making the attempt that seems to characterise the Atlantic passage. The journey, when one comes to reckon it out, however, is neither easy nor short; indeed, it is comparable in length with that over the Atlantic Ocean. The difficulty with the Atlantic passage is the problem of fuel supply. If it is worth while arranging for ships to be stationed at intervals, someone will probably take the risk sooner or later.

In discussing the possibility of a single journey of this magnitude it is imperative to recognise the fundamental limitations imposed by the elementary mechanics of the problem. There is no aeroplane that has yet been built for a weight of much less than 15 lbs. per h.p. empty, nor any aero engine with which we are acquainted that consumes less than half a pint of fuel per h.p. hour. It is, doubtless, possible to improve upon both figures, but the Atlantic is scarcely the proper trial ground for such experimental machines, nor for using either new engines or new fuel.

Looking at the map in order to estimate distances, and leaving out of consideration the possibility of jumping across in three stages *via* Iceland, Greenland and Labrador, it would seem that the shortest distance on which one might reasonably base an estimate is in the order of 2,000 miles. This should leave something of a margin on a straight line flight from Ireland to Newfoundland, but not more margin than is absolutely essential for safety.

The starting point in such an estimate is, as we remarked above, the question of weight and fuel consumption. The governing factor, however, resolves itself into a question of low resistance to flight—that is to say, on improved body design and the use of wings with a high lift: resistance ratio flying at their best attitude. At the present time machines experience a resistance in the order of one-sixth of their weight at their best speeds. There is no doubt that this value can and will be reduced in the future; but again, from the standpoint of a preliminary estimate of present-day possibilities, there is small justification for assuming a resistance of less than one in six at a speed of, say, 70 m.p.h. At lower speeds one might have less resistance, but one would occupy

longer on the journey, which in turn would involve carrying more fuel.

A journey of 2,000 miles at 70 m.p.h. would occupy nearly 29 hours. Let us take 30 hours for the sake of round numbers. An engine working on a consumption of half a pint of petrol per h.p. hour for 30 hours continuously will, therefore, consume 15 pints of petrol per h.p. for the entire journey. Once again let us take round figures, and say 2 gallons, which represents a weight of roughly 15 lbs., rather less.

Thus, starting with the machine that itself weighs 15 lbs. per h.p. in construction when empty, we must add thereto the weight of 15 lbs. per h.p. for fuel consumed on the journey. At the start of the flight, therefore, such a machine cannot be expected to weigh less than 30 lbs. per h.p. exclusive of the two pilots.

The resistance to flight we have supposed to be 1 in 6 at 70 m.p.h. One-sixth of 30 lbs. is 5 lbs.—that is to say, there is a resistance of 5 lbs. per h.p. at 70 m.p.h. at the start of the journey. This resistance at this speed represents an expenditure of 350 mile lbs. per hour, or 94 per cent. of 1 h.p., which is an efficiency quite unattainable by any modern propeller. Owing to the fuel being consumed steadily throughout the journey, the weight in flight will decrease with the distance from shore. With the decrease in the weight there will be a decrease in the resistance. If the resistance were proportional to the mean weight in flight, it would amount to one-sixth of 15 lbs. plus $7\frac{1}{2}$ lbs.—that is to say, it would be about 3.75 lbs. instead of 5 lbs. resistance. At 70 m.p.h. this represents an expenditure of just over 260 mile lbs. per hour, or 70 per cent. of 1 h.p., which is a more reasonable figure for propeller efficiency.

It will be recognised that the above elementary calculations assume the machine to be flying without a pilot. They are also independent of the size of the machine, certain assumptions having been made in the light of the data at present available in respect to actual aeroplanes. A journey of 2,000 miles at 70 m.p.h. could scarcely be undertaken by one pilot; two men at least would have to be aboard the machine, which would have to be fitted with dual control. Their weight would amount to at least 300 lbs., and the problem of selecting the best type of aeroplane for the journey is very largely governed by this item.

Thus, suppose the power is small, then the weight of the passengers represents a greater proportionate increment to the resistance than when the power is high. Apart from this consideration, it is immaterial whether the machine be large or small, except in so far as the size may alter the figures chosen as the basis for the above calculation. In the light of modern data it would require an exceptional aeroplane and a very exceptional engine to improve materially upon the values chosen.

It is interesting to consider the conditions represented by an attempt to perform the journey with a 100-h.p. engine. In this case the pilots' weight of 300 lbs. represents 3 lbs. per h.p., one-sixth of which becomes half a pound resistance per h.p. On the assumption that the mean resistance of the machine and petrol amounts only to 3.75 lbs. per h.p., this extra half pound, which remains constant throughout the journey, brings the resistance up to $4\frac{1}{2}$ lbs. per h.p., which, at 70 m.p.h., represents about 300 mile lbs. per hour, or 80 per cent. of 1 h.p.

It is easy to recognise, therefore, that the fundamental mechanics of the problem brings such a journey as this very near to the limits of present possibility.

It is at any rate very clear that those who make a serious attempt for this prize are best advised to concen-

trate their attention upon low body resistance, for whereas it may be a difficult matter to reduce the weight of an aeroplane to less than 15 lbs. per h.p., or the fuel consumption of an engine to less than $\frac{1}{2}$ pint per h.p. hour, it does seem reasonable to anticipate that we may ultimately attain to aeroplane designs that offer less than a resistance of 1 in 6 at 70 m.p.h. For a machine such as that outlined, the initial fuel supply assumes somewhat alarming proportions. Thus, as we pointed out, it is necessary to start with 2 gallons of petrol per h.p., which, for a 100 h.p. machine, represents 200 gallons, which would weigh about two-thirds of a ton. The machine as a whole therefore would weigh about a ton and a half.

This represents a weight of about 33 lbs. per h.p., which is much greater than any figure characterising a successful machine in the Military Trials. The Cody, which weighed 2,680 lbs. in flight, had an engine rated at 120 h.p., which brought the load per h.p. to less than 24 lbs. To assume a more powerful engine in the above problem is merely to assume a proportionate increase in the total weight carried, with the exception of the fraction represented by the pilots. Assuming the proved reliability of the engine, however, it would be desirable to use the largest that is available. Not only does the greater power render it more reasonable to expect the realisation of a low fuel consumption, but it reduces the effect of the pilots' weight.

Aeronautical Lectures.

We hope that one outcome of the offer by the *Daily Mail* may be a great interest in the design of low-resistance bodies. Prof. Petavel, who is delivering a series of Howard Lectures on Aeronautics at the Royal Society of Arts, showed some very striking comparisons last Monday evening, which would have interested many of the constructors who were not present. They were models constructed to show to an audience the immense potential reduction in head resistance that might ensue from using streamline bodies and good fair-shaped struts. It is a study that should be very much to the fore in the constructor's mind, and particularly now that there is the stimulus of a £10,000 cheque indirectly connected with it.

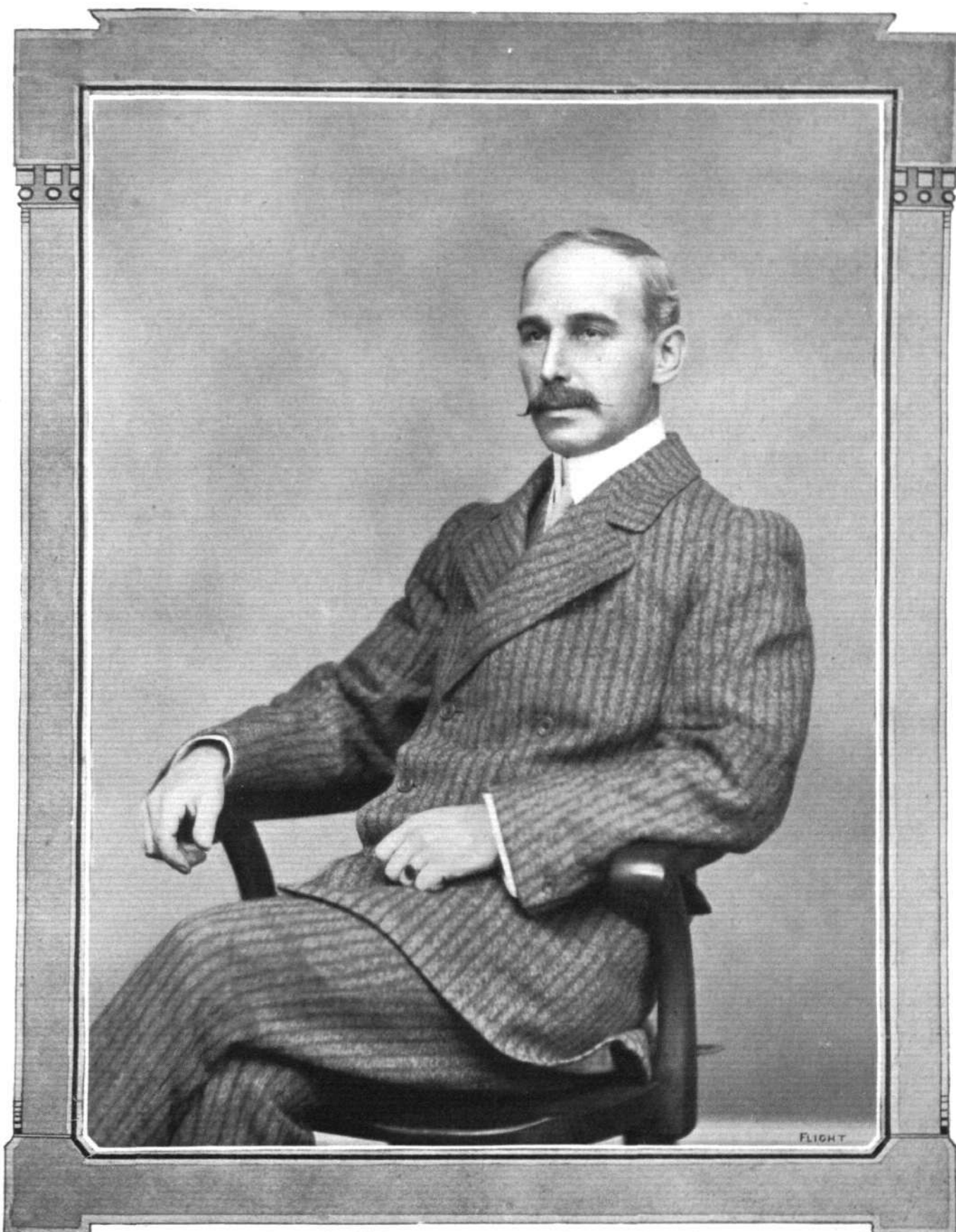
Lectures such as those now proceeding at the Royal Society of Arts deserve to be well attended by the members of this new profession, as also do the meetings of the Aeronautical Society. It is quite evident from the interest that has been taken in its proceedings that it is successfully fulfilling some of the technical requirements of those scientifically interested in the movement. But, from the Council's report, which was presented at the annual general meeting last Wednesday week, it is apparent that it must have a largely increased membership if it is to continue to carry on this useful work adequately. There are without doubt many readers of FLIGHT who would gain much from an association with this already historic yet so very modern society, and who would be only too pleased to feel that by joining its ranks they are being of real service to such a worthy institution.

The phenomenally rapid progress in aeronautics has been due solely to the openness with which scientific and practical data have been discussed among members of scientific institutions like the Aeronautical Society and in the technical Press. We ourselves feel proud to think that FLIGHT has consistently done its best to further this end for a period that is already beyond four years. Time flies! One hesitates even to let the imagination venture into the realm of aviation four years hence. Will the Atlantic have been flown by then, we wonder?

APRIL 5, 1913.

FLIGHT

MEN OF MOMENT IN THE WORLD OF FLIGHT.
Designer-Constructor.



MR. HOWARD T. WRIGHT.

Our Phantom Air Defences.

Mr. Churchill's statement on the subject of aeronautics and the Navy in the course of his speech on the Naval Estimates was very far from being as vigorously progressive as we had a right to hope for from the type of statesman that the present First Lord of the Admiralty has shown himself on occasion to be. Indeed, we are almost given to wonder whether Bismarck's famous dictum regarding the late Lord Salisbury does not apply with equal force to the First Lord.

What is the position? The entire Press of the country has made it very clear that it is, heart and soul, behind any movement for a strong air fleet for Great Britain. Accepting that the Press is the mouthpiece of the public—and in this particular case there has not been a single adverse comment that we have seen during the whole of the recent discussion on Britain's place in the air—then we must also accept that the whole country is behind the movement. Of the necessity for a strong air fleet there is no need to speak at the moment. That has been argued out and settled once and for all. It is necessary—more, it is absolutely essential—that our air defences should be brought into line with those of our possible foes. So much may be taken for granted. Now, what is being done by the Government to whom we have entrusted the national safety?

On the military side, Col. Seely has already laid down his policy in respect to the equipment of the military wing, which for the time being is limited to the needs of an expeditionary force. In his estimates he provided a nominal half million for the year's expenditure, but we still fail to find in that estimate adequate provision for the capital expenditure that, so far as we can see, is absolutely essential if the Military Wing of the R.F.C. is to be brought to its proper establishment without delay.

Having had the military policy laid down and accepted by Parliament, one may argue with some assurance that it is upon the Navy that the onus of the real aerial defence of the country rests. We expected that Mr. Churchill would have risen to the occasion, realising how admirable was his opportunity to lay down a promising programme in the very heat of public enthusiasm. In this, however, he has been forestalled in a remarkable degree by the Germans, who have made it very clear that the British lead in warship construction, which they find so irksome and so impossible to throw off, shall in the matter of aerial armaments be the other way about.

The most we can make out of Mr. Churchill's estimate of expenditure for this year is a sum amounting to about £320,000. It is a cheese-paring policy, we do not hesitate to say, for it falls short of even the very

moderate recommendations put forward by those who have been doing their level best to encourage public opinion to a favourable attitude towards aerial developments in this country.

Take the programme suggested by the Navy League, for example, which, so far as the Naval Wing of the Royal Flying Corps was concerned, suggested the building of four rigid dirigibles costing about £200,000; three double sheds for their accommodation, costing about £150,000; hydrogen plant costing about £60,000, and hydro-aeroplanes costing about £100,000. Here is more than half a million already, and surely it is a very moderate proposal in respect to a power like Britain, particularly when we find our neighbours proposing to spend about ten times that sum.

Mr. Churchill hoped in his pleasant way that he would not be annoyed by any more "panic language." Unfortunately, the modern course of Government has these many years since come to such pass as to involve an almost unlimited amount of shouting in order to produce very little result. If it were not for the shouting, Mr. Churchill would find it a hard matter to keep the Navy itself in its proper state of efficiency, and even as it is he seems to have difficulty, if we may judge from sundry Press comments, in maintaining the programme that he seems to have led some people to expect.

The standard on which our naval defence is based is an arbitrary one, and just as arbitrary must be the basis of our aerial defence. If nobody shouts we shall get very little done, but it is very largely a matter of shouting at the right time, and, of all times, the period of the annual estimates seems the most appropriate. It is a foregone conclusion that the results attained by Germany or France cannot possibly be accomplished even by British genius with the expenditure of half the money. At the present time, we are not even spending half the money, and what is even more important is that we have only spent a very small fraction of the money that these countries have spent in the past.

It is beside the point to talk about panics, to discuss the possible efficacy of the dirigible as a machine for patrol defence, or to point the finger of derision at the broken back of the latest Zeppelin. British airships, too, will have broken backs before we have had very much experience with them. It is not the first broken back that Germany has experienced by any means, and we say that these details are merely incidental to the business. They do not in the least affect the main issue, which is—are we, or are we not, going to be supreme in the air? If so, then we must spend money more freely, and Mr. Churchill's programme for the Naval Wing of the Royal Flying Corps, as it appears on paper, is inadequate.

HOW THE GERMANS

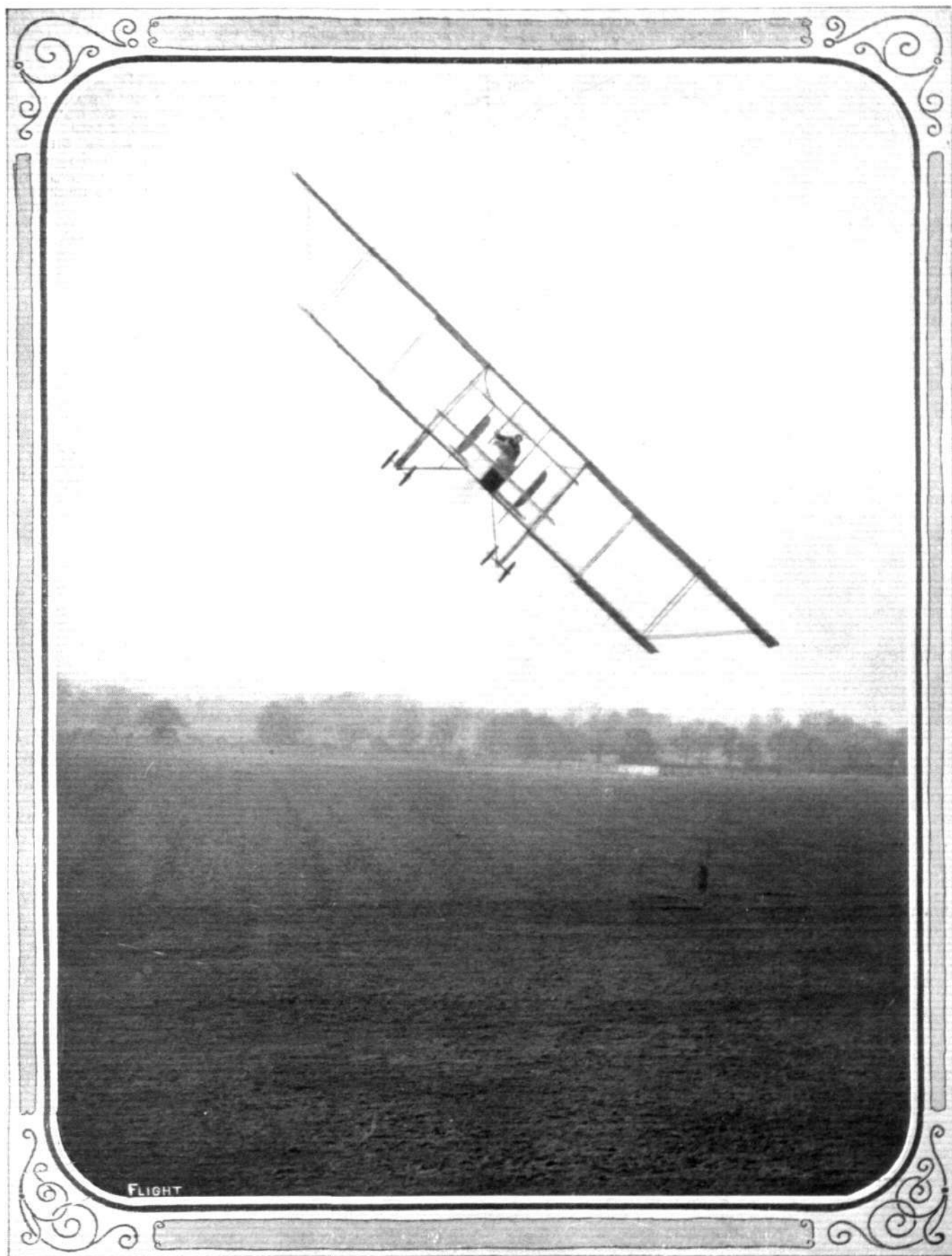
In an interview with a correspondent of the *Daily Mail*, Capt. von Pustau, the well-known naval aeronautical expert of the *Taegliche Rundschau*, has given his views on the true meaning of Germany's plans to spend a capital sum of £7,000,000 on the immediate development of her military and naval air fleets.

"Great Britain may be sure of one thing—she will never be allowed to impose a ratio of 16 to 10 on Germany in the air as she has done on the sea," said Capt. von Pustau. "In the airship realm we are certainly supreme. It would manifestly be a false elementary principle of strategy if we allowed a foreign nation to overtake, not to say outstrip, us in the advance we have made. In the race for supremacy at sea we

VIEW THE POSITION.

entered too late. We do not intend to be caught napping in the race for the mastery of the air. That is the psychology of our aerial programme in a nutshell. Although we shall build a great many airships we have not turned our back on aeroplanes. They will be provided to whatever extent our own particular needs suggest."

The *Taegliche Rundschau*, which is not only the Berlin organ of the Pan-German Party but also is the favourite newspaper of the military and naval class, is the journal which has taken the lead in urging the Government to press home without delay the advantages Germany possesses over the rest of the world in serviceable airships of the most powerful type.



Another fine bank by Pierre Verrier, with a passenger on board, on the Maurice Farman at Hendon.

THE NAVY AND AVIATION.

ON Wednesday last week, the First Lord of the Admiralty, Mr. Winston Churchill, in explaining his memorandum on the Naval Estimates, made the following reference to aeronautics:—

I pass from oil to air, that other great new topic to which my statement ought to refer. My right hon. friend (Col. Seely) entered very fully, last week, into the progress and present position of Army aviation. The aeroplane service plays a much smaller part relatively in the naval organisation than it does in military affairs, and, of course, in the Navy as well as in the Army, it is in its infancy. This time last year the Navy had five machines and four trained pilots; to-day it has 40 machines and 60 pilots. The anomaly of our having more pilots than machines is due to the unexpected non-delivery of machines which have been ordered, but, owing to one difficulty and another, have been delayed in delivery. Twenty more machines are expected to be received in the next few weeks, and by the date of the manoeuvres in July we shall have 75 naval machines and 75 pilots. By the end of the new financial year, for which we are now providing, we shall have 100 pilots and considerably over 100 machines in the naval wing; that will make, as I imagine, not far short of 300 aeroplanes between the Navy and the Army put together at the end of the year, which the House is now asked to provide for. My right hon. friend and I have presided over our respective departments during the whole of this very remarkable development, and I think the scale on which progress has been and is being made, and the rapidity with which the advance from nothing is being effected is really not a subject for levity and derision, with which I regretted to see one or two speakers in the recent debate were inclined to treat it. We have no reason to complain of the skill of our naval aviators. We have carefully studied the report of the Committee, but the Naval Flying Wing still use monoplanes; we have nine monoplanes in use. We consider it necessary to use them for the purpose of reconnaissance, training, and scouting, and also in connection with the attack of submarines, an interesting by-product of this new form of warfare. It is also not so dangerous to alight on the water from a monoplane as to land on the unyielding surface of the earth, and no serious accidents have occurred with any naval machine to any naval aviator. We believe that the various types of hydro-aeroplanes which we have evolved and which are now being delivered, some of which will carry guns, and which are fitted with wireless with a range of 60 miles, and which can rise and descend in comparatively rough waters, are, to put it very modestly, certainly as good as anything which exists abroad, and from the result of prolonged exercises during the past year at the various naval stations with hydro-aeroplanes and submarines, and in conjunction with the patrol flotilla, we have come to the conclusion that it is necessary that there should be a chain of hydro-aeroplane stations at various points on the British coast line for naval scouting purposes and for working with the patrol flotilla. Stations are being rapidly established, and a number will be complete in the course of the present year. The problem of carrying aeroplanes in ships is also receiving attention, and a cruiser has been detached for this service. Altogether, compared with other navies, the British Aeroplane service has started very well; the preliminary difficulties have been surmounted, and we shall be able now to move steadily forward in several promising directions.

I have a less satisfactory account to give of airships. Naval airship developments were retarded by various causes in this country. The mishap which destroyed the "May Fly" or the "Won't Fly," as it will be more accurate to call it, at Barrow, was a very serious set back to the development of Admiralty policies in airships. It happened to coincide with a moment of depression in Germany. It is only within the last 12 months that our enterprising neighbours have begun to reap the fruit of so many years of experiment and expense, and up to a very late period it was doubtful whether any valuable military results would be achieved. It is evident that the time has arrived when we must develop long-range airships of the largest type; that cannot be achieved by an impatient gesture, nor by scattering money wildly, and the following measures are all which we consider useful to propose at the present time. First, our naval airship section has been established, and five officers and 50 men have, by the courtesy of the War Office, been trained at Farnborough with the military airships. Secondly, two medium-sized non-rigid airships have been purchased for training and experimental purposes. One of these, the Astra Torres, is almost completed, and will shortly be undergoing trials. Another, a Parseval, has an envelope completed, and the car is nearing completion. Provision is made in the Estimates for a double airship shed in the Medway valley; two others are already available for use, and steps are being taken to establish other large sheds in suitable districts. As the development of the naval personnel and accommodation for airships proceeds—these are antecedent conditions—we shall order other airships.

We also propose to enlist the services of some great British manufacturing firm in the construction of rigid airships, and negotiations are on foot which will lead to that result. The money taken in the new financial year for the Naval Air Service is about £321,000, which, added to that taken by the Army for their aeroplane service, makes a total for the year of about £850,000.

I do not think it would be practicable to spend a larger sum of money without wasting it at the present time. No reproaches are deserved by the Admiralty for any time that has been lost in the development of dirigible airships. I do not suppose there is any Admiralty in the world which runs more risks and spends more money on new ideas and new experiments than we do. It will be found that before these vessels emerge from the experimental stage and become, within the restricted limits of their military action, a really potent factor, we shall be provided both with the means of using the advantages which they offer, and of combating the dangers which they threaten. Meanwhile I do trust that we are not going to have any silly panic language used about the dangers we are supposed to run. If war breaks out to-morrow, foreign airships no doubt might do a certain amount of mischief and damage before they got smashed up, which would not be very long; but it is foolish to suppose that in their present stage of development they could produce results which would decisively influence the course of events. The hon. gentleman opposite made our flesh creep the other night, by suggesting the dropping of bombs from airships on the House of Commons. If that event should happen, I am confident that the members of this House would gladly embrace the opportunity of sharing the perils which the soldiers and the sailors have to meet. My right hon. friend the Secretary of State for War, who, like all his predecessors, comes in for a great deal of criticism when the Army Estimates come round, has, however, made arrangements which will shortly be completed, to distribute 30 or 40 guns, with improvised mountings, capable of vertical fire, at places of military significance, and a better and more powerful gun is being manufactured in sufficient numbers owned by the Army and the Navy as quickly as possible, and which will be ready towards the end of autumn. The results of the trials of these improved guns have greatly encouraged those who disbelieved in airships as effective machines in war apart from scouting. A number of vertical searchlights of a satisfactory pattern for night firing are nearly completed. In these circumstances I trust that the public, without losing interest or failing to give us support, will await future developments with composure and sobriety.

On the following day the debate was continued, and Mr. A. Lee said: The theory of the Government in making aviation a joint concern of the Army and Navy was perfectly right, but it made it very difficult to bring to book the people really responsible for the deplorable position of this country in aviation. The characteristic modesty with which the First Lord dealt with this subject as regarded the Navy was in such refreshing contrast to the attitude of the Secretary for War that his remarks almost disarmed criticism. They were bound to endorse the implied reproach which the First Lord conveyed to his colleague, the Secretary for War. He agreed that the work done in connection with hydroplanes was deserving of the highest praise. It was the general opinion on the Continent that in hydroplanes we were leading. With regard to airships, the Admiralty had placed two orders abroad, but he was told by experts that by no means the best type was ordered. There was some suggestion of a large rigid airship being built in this country. Was that all the Admiralty was doing in this matter? Was the Admiralty really satisfied that our dockyards, magazines, and other naval establishments were secure against the possibility of serious overhead attack? If it did not satisfy, how did the right hon. gentleman propose to protect them? Obviously, the provision now made was entirely inadequate.

Did Mr. Churchill consider that the question of secret rendezvous for a fleet at sea in time of war was not seriously affected by the new problem of airships? The First Lord had said that Zeppelins were not potent factors, and were more or less experimental. Yet they had made several good performances in fine weather, and we occasionally had fine weather in these islands. Nothing could alter the fact that, even if we had made a fair advance in these matters from nothing in the last twelve months, there had been inexcusable delay in the past.

Lord Charles Beresford said as to the question of aircraft, he believed it would revolutionise war. It had removed one of our great natural defences, the fact that we are an island, and he deplored the fact that the Government had not taken a more serious view both in regard to the Army and Navy. The Home Secretary's idea of saying, "Come down there and I'll put you into prison" was nonsense. There was only one man in the House who could have invented it.

He hoped the Government would look into the matter

more carefully and see that we had now to have the mastery of the air as well as of the sea. At the moment we were outclassed and outmatched, and we were starting late. In these circumstances he regretted the First Lord had not taken more money for this purpose, as he might have done.

On Monday, when the debate was resumed, Mr. Eyres-Monsell said that, with regard to airships, his fear related chiefly to the defence of the dockyards, arsenals and magazines, and in that connection the statement of the Government was most unsatisfactory. The only crumb of comfort came from the Civil Lord of the Admiralty, who said he had this danger in his mind. In the matter of airships, the Government had grossly failed to provide for the adequate defence of the country.

Mr. Churchill: With regard to aviation, it seemed unreasonable and unfair to sneer at the Home Office regulations. It was very necessary that regulations should be made, and no one could complain that they were not of a thoroughly comprehensive and sufficiently drastic character. The powers retained under them were of a far-reaching character, and the Admiralty were very glad they had been made as the result of pressure from them, because they were an essential part of the Admiralty's policy in dealing with the unjustifiable intrusions from foreign aircraft. A little of the ingenuity which had been devoted to pouring ridicule

upon these regulations would have been much more profitably occupied in scientific study of the very difficult problems connected with the air and the effects of aircraft on warfare generally. The proposals which had appeared in the newspapers that an aerial service should be established apart from the Army and the Navy found no support so far as the Admiralty was concerned. It was absolutely essential that airships and aeroplanes which had to work with the Fleet should be under the absolute control of the Admiralty and the Fleet officers commanding the different squadrons, and they could never allow any third department to come between them in what would be a permanent and continuing factor in naval arrangements.

Later, Mr. Long said, when we realised how far behind Germany this country was in the provision of air services, he wondered that the First Lord had not announced greater activity in this direction. If the right hon. gentleman came to the conclusion that it was necessary to do more, he hoped he would not hesitate to ask the House of Commons for the necessary provision.

Mr. Churchill said it was not a question of money at all.

Mr. Long expressed the hope that the other difficulties, whatever they were, would be surmounted, as it seemed to him that if half that was said about this new method of warfare was true, the very existence of the country might be threatened.

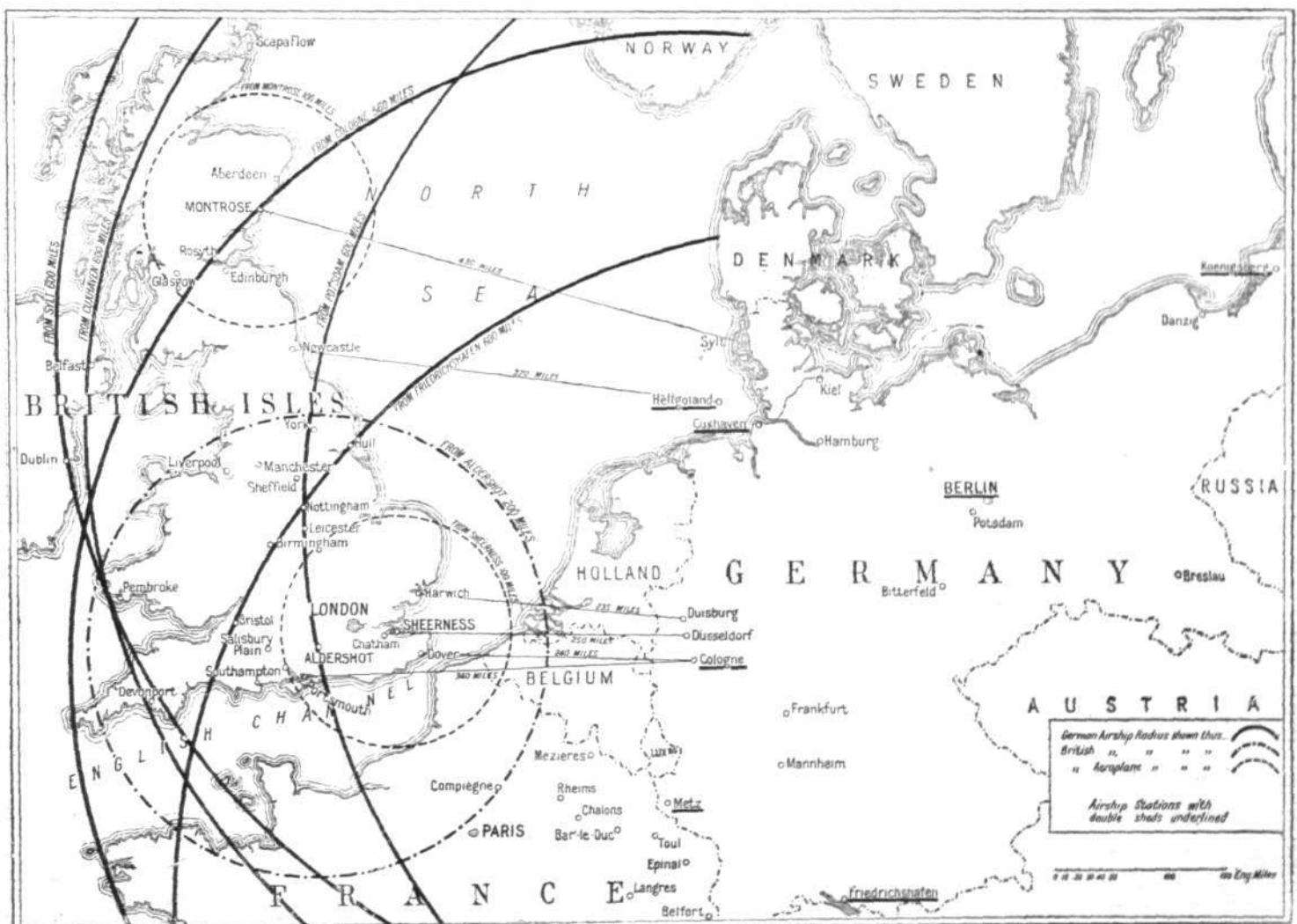


AIR STRATEGY OF THE NORTH SEA.

THE German airship fleet of 13 dirigibles, 5 of which are capable of a speed in excess of fifty miles an hour, is stationed at various points throughout the country, but the greater number of airship bases are situated, the *Daily Telegraph* states and as the map shows, along the coast of the North Sea, or further south inland, whence,

secure from attack, they could traverse Holland or Belgium, and reach the English coast in from five to six hours.

The black circles represent the radius of action (an out-and-home journey) of the large rigid airships from their bases. This radius of action has been calculated on a basis of a 600-mile flight each way,



AIR STRATEGY OF THE NORTH SEA.—An illuminating map published by the courtesy of the *Daily Telegraph* showing the possibilities of the German air fleet in regard to the British Isles.

a most conservative estimate, seeing that many of these vessels possess a 1,000-mile radius at the very least. Adverse winds have, however, been allowed for, as also the fact that the carrying capacity of these airships, normally absorbed by fuel, might, under given conditions, be reduced by the embarkation of a considerable weight of explosives.

Even so, it will be seen that, starting from the Zeppelin station at Friedrichshafen right in the south, the active radius of a German dirigible would cover the whole of the great south-east naval bases of England and all the eastern harbours up to and including Hull. The base at Potsdam stretches its radius of action as far as Aldershot—at present our solitary airship station. Cuxhaven, the newest naval airship station, not only covers the whole of England and Wales, but takes in the greater part of Scotland, and even includes the Irish Channel and Belfast.

The radius of action of an airship based on Heligoland is not indicated, for the simple reason that it passes beyond the limits of the map. On the other hand, the dotted circles show that so far as the true defensive strategy—a vigorous offensive against the enemy's bases—is concerned, the British air-fleet is non-existent. It is also clear at a glance that a large section of the North Sea, including some of the most strategic points, is outside the scouting powers of our aircraft, and open to the unrestricted reconnaissance of those of an enemy.

Moreover, another fact with an important bearing on our naval

strategy is that, even from a base placed so far to the south as Cologne, the access to the Baltic, the Kattegat, and the Skagerrak is well within the range of possible action.

From Cologne to Dover is a distance, across Belgian territory, of 240 miles; to Portsmouth, 340 miles; a five hours' night journey in the first case, or seven hours' in the latter. The East Coast bases are scarcely farther removed from the German naval airship stations that fringe the shores of the North Sea.

The map clearly shows the strategic disposition of these German stations, only those belonging to the military and naval authorities being included. In addition, a vast number of smaller stations, owned by private companies or municipalities and equipped with sheds too small to house the larger rigid craft, are spread in a close network about the country. The stations which are underlined possess accommodation for two or more vessels.

The map is too significant to require further comment; one may read from it the whole of a carefully thought-out strategic plan, immense in its proportions, offensive and defensive at once. Vividly contrasted with this is the actual radius of action—computed on a far more generous scale than in the case of the German craft—of the largest of the three existing British airships, extending from Aldershot to barely across the Channel. Finally, from the two existing naval aeroplane bases, at Sheerness and Montrose, radiate the ranges of the present aeroplanes, computed at rather over three hours' flying at 60 miles an hour. In the face of the new German air programme, these facts are the more alarming.

THE GERMAN AIR FLEET.

FOLLOWING upon the very meagre provision in the British Estimates for the development of our Service aircraft, the announcement on Saturday of the huge increase appropriated to the Aerial Branch in the German estimates, added to a definite programme of procedure, has naturally created considerable sensation and brought into stronger relief than ever the appalling state of backwardness into which this country has drifted, with apparently a far worse state of things to come. It is as difficult, as with the British figures, to arrive at very accurate figures owing to the mix-up of various amounts under different general headings, and the total figures variously given in the daily papers leaves considerable doubt as to the correct totals. A very careful analysis has been made by the Berlin correspondent of the *Daily Telegraph*, and as a basis for consideration we reproduce this below. It should give our Ministers serious reason to pause in their present attitude towards Service Aeronautics and make an effort to bring Great Britain more into line with the efforts for supremacy in the air being made by the Continental Powers. The analysis is as follows:—

A great mass of material—bills, supplementary estimates, explanatory memoranda, and so on—with reference to the Government's new military projects was made public on Saturday. Of special interest to England are the proposals of the Ministry of Marine for the development of the naval air fleet. On the army aerial service it is intended to spend from 1913 to 1915 nearly £4,000,000 (79,000,000 marks), but no details as to how this money is to be laid out have, up to the present, been made known. The Ministry of Marine is, however, more explicit. To its supplementary estimate of £150,000 sterling for "acquisitions, works, and experiments connected with the technique of communications," and "assistance to militarily important undertakings of this kind," is appended a note to the effect that the aerial station at Cuxhaven can, and will, be completed this year, instead of in 1914, as originally purposed, and that favourable experiences with "another airship system" (probably the Schütte-Lanz) have made it appear desirable to acquire a vessel of this type for the navy.

Navy's Aerial Programme.

Further, a special memorandum sketches out for the Navy a programme of aerial development covering the years 1914 to 1918. This document states that the tests carried out with airships and flying machines have made it evident that "the new weapon has for the purposes of the Navy brought a valuable extension and supplementation of tactical and strategic reconnaissance, and can also, under certain circumstances, be employed as a means of attack."

It is therefore proposed to provide two squadrons, each of five airships, of which four will be kept in service and the fifth in reserve. The entire aerial force will be concentrated at one station, where the commissioned airships will be lodged in four revolving double hangars. The reserve vessels will be kept in fixed sheds, which, of course, are not only much cheaper, but also demand considerably less space for their accommodation. In addition to these structures, the station is to be furnished with gas works and engines for generating power and electric light.

The principal of automatic renewal, which is so important a feature of the German naval legislation, is also to be applied in the

case of the air fleet. Only instead of the twenty years which battleships and cruisers are asked to serve, four years only has been decided upon as the normal lifetime of an airship.

Aviation Stations.

Under the organisation sketched out for the naval aviation corps there will be one central and six peripheral stations. Corresponding to each of the latter will be a group of half-a-dozen aeroplanes, and fourteen will be held in reserve, making a total establishment of fifty machines. The central station will be the headquarters of all six groups, and will be equipped with an aerodrome, hangars, barracks and repairing shops. Each of the peripheral stations will have accommodation for ten aeroplanes, and the necessary personnel, together with benzine storage and facilities for carrying out minor repairs.

No age-limit is to be fixed for the flying machines. They are to be replaced "according to requirements."

Details of Expenditure.

The total cost of this scheme in the years 1914 to 1918 is estimated at £2,500,000 sterling, which will be divided as under:—

Aircraft and fixed works	...	...	...	...	...	£1,600,000
Fuel and maintenance	...	...	...	...	...	600,000
Personnel	...	...	...	...	...	300,000

Exclusive of personnel, the outlay on the airship fleet in this period will be £1,750,000, distributed as under:—

Purchase of airships	...	...	...	...	...	570,000
Fixed works	...	...	...	...	...	700,000
Fuel, maintenance, subsidies to private hangars, airships	...	...	...	...	...	500,000

Also, apart from personnel, the expenditure on aeroplanes for 1914 to 1918 will be £450,000, distributed as below:—

Purchase of machines	...	...	...	...	...	150,000
Fixed works	...	...	...	...	...	200,000
Fuel and maintenance	...	...	...	...	...	100,000

For the service of airships and aeroplanes a total of 1,452 officers and men will be required, and this establishment it is proposed to reach by gradual stages in the course of the five-year period, during which the cost in pay and maintenance will, as already indicated, be £300,000. On an average, the whole aerial scheme of the navy will involve an annual expenditure of half a million sterling, but the express reservation is made that the total outlay must be split up so as to meet the special needs of each separate year.

The German Army Flying Corps.

ACCORDING to information published in the *Lokalanseiger*, the flying corps attached to the German Army is to consist of five airship and four aviation battalions. The former will be split up into detachments which will be distributed among the airship stations at Berlin, Hanover, Dresden, Cologne, Düsseldorf, Darmstadt, Mannheim, Metz, Lahr, Friedrichshafen, Königsberg, Graudenz, and Schneidemühl.

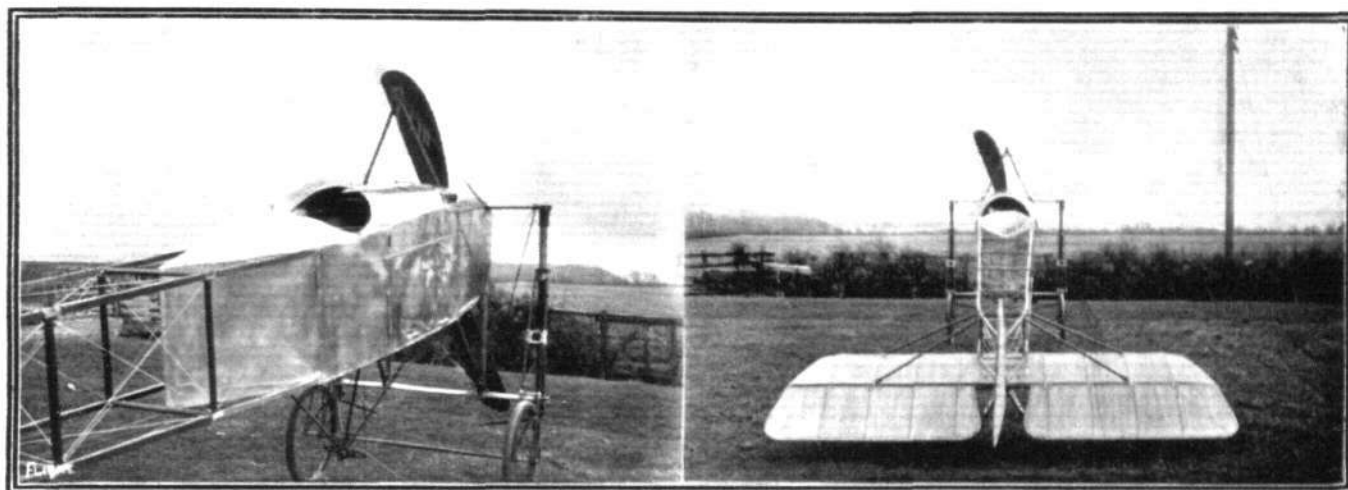
The aviation battalions will be arranged in twelve sub-divisions, and they will be stationed at the military aerodromes at Doeberitz, Zaithain, Jueterbog, Posen, Graudenz, Königsberg, Cologne, Hanover, Darmstadt, Strassburg, Metz, and Freiburg.

REBUILDING A BLÉRIOT.

APART from the establishments of the leading manufacturers, there are a number of well-equipped workshops up and down the country where quite useful work in connection with aeroplanes is being carried on. For instance, at his flying headquarters at Foryd, Abergele, N. Wales, Mr. Vivian Hewitt has established a fine workshop, which includes a power lathe, shaper, drill and grindstone, and a large assortment of tools, while three mechanics are employed. Electric light is produced on the spot, there are arrangements for re-magnetising magnetos, and a nickel-plating plant.

piece of wood let in at the top. Instead the whole is brazed together, having previously been cut out of steel and carefully fitted. There are four steel warping wheels for the top bracing wires to work on, and the bolt for the four front wires is half as thick again as in the original machine. The *cabane* is stayed across near the bottom to take any strain off the *fuselage*. It is braced from the top to the *fuselage* by eight wires instead of four.

"The ribbons for staying the underside of the wings are belled out at the ends where the steel clips are riveted to them, thus



Two views of Mr. Vivian Hewitt's Blériot in its latest form.

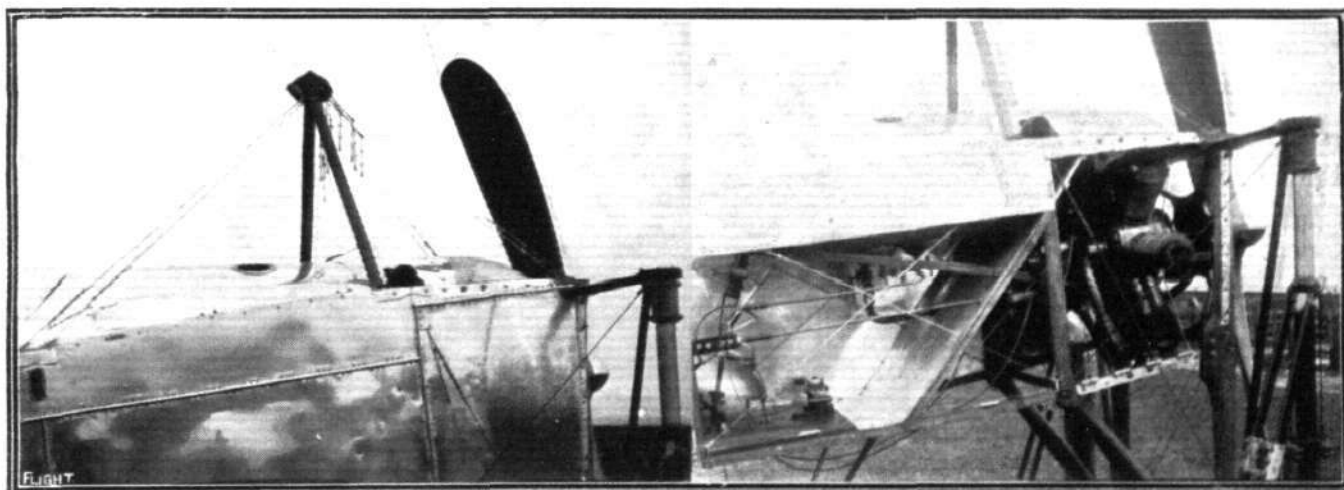
After his trip across the Irish Sea, Mr. Hewitt decided to completely dismantle his Blériot monoplane and rebuild it, incorporating during the process some ideas of his own. The result is seen in the accompanying photos, and Mr. Hewitt tells us that two of his mechanics have been engaged on the work during the past five months. The only original part of the framework of the machine is the landing chassis, the engine, and the four longitudinal members of the *fuselage*. Complete, the machine, in its latest form weighs about 35 lbs. more than it did originally. Regarding the alterations which have been carried out, Mr. Hewitt says:—

"The wings each weigh 10 lbs. more than Blériot's wings, and are fitted with a wooden leading edge instead of a piece of aluminium

obtaining uniform strength throughout. There are four ribbons to each wing.

"The bottom *planche* has a strong steel ribbon, suitably drilled out, for lightness, running from one end to the other, and connected to the ribbon brackets. The *planche* is made of hickory.

"The bottom *cabane* which takes the warping gear is braced together by cross tubes, as can be seen in the photograph. There are also two steel ribbons from one side to the other of the *fuselage* where the warping *cabane* bolts on, thus taking up the tendency to push the *fuselage* members out when climbing. The warping bracket, which was originally aluminium, is now steel machined out of the solid and brazed into the tubes. There are four warping



On the left the top *cabane*, and on the right showing the engine: shield and doors removed. They can be taken off and replaced very quickly.

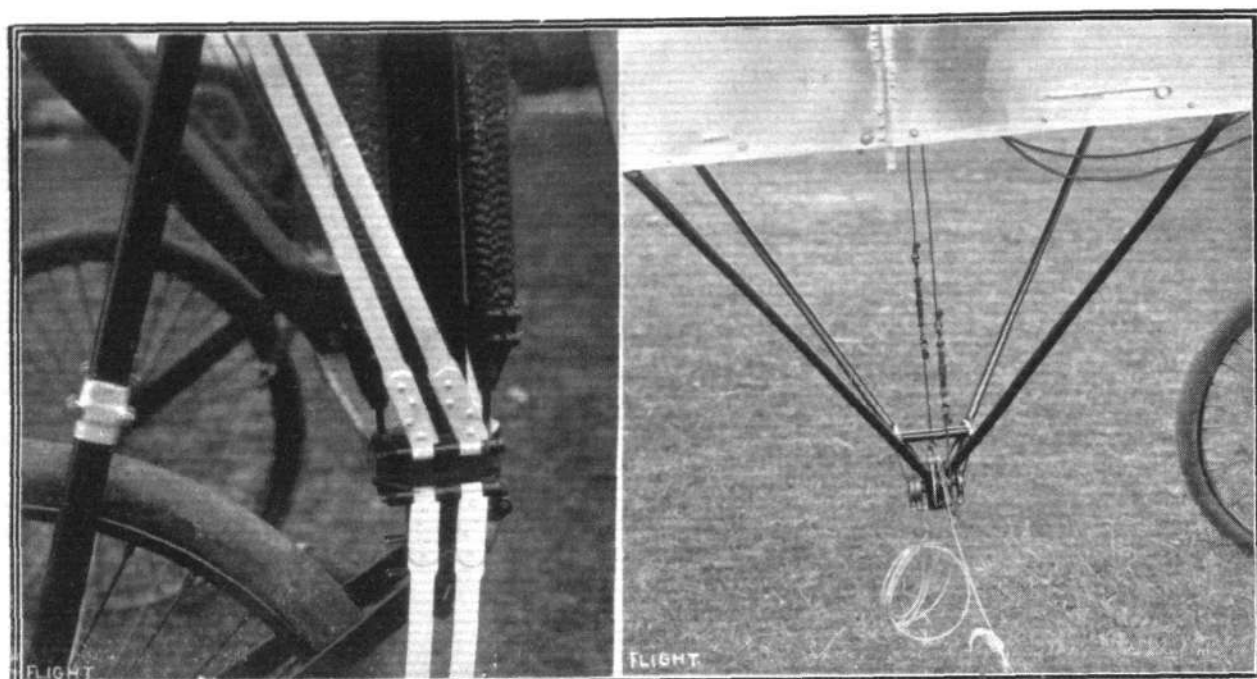
bent round. The ribs are all slightly thicker, and the wings altogether stronger all round. The front spar and rear spar are fitted with four plates each instead of two. It is impossible for air to enter the wing, where the plates come through the fabric, as small pieces of wood are fastened to the spars inside the wings and the fabric is nailed to these. A piece of cane runs along each rib over the fabric instead of only as far as the radius of the propeller. Round the tube that the front spar of the wings fits into extra steel brackets have been fitted, thus strengthening it up.

"The *cabane* is slightly thicker gauge steel tube, and there is no

wires instead of two to the wings, and these pass round steel wheels. The wires from the *cloche* to the warping arm are double the thickness of those originally used.

"The *cloche* has four steel arms running from the top to the bottom of the bell to which the control wires are attached, so that even should they (the control wires) break from the aluminium the steel arms still hold them. As the arms are all cut out of a single piece of sheet steel, and the whole slipped over the *cloche*, it is impossible for these to come adrift.

"The *fuselage* has had light steel plates fitted between it and



On the left Mr. Hewitt's method of attaching the four ribbons to the bracket is shown, while on the right is the new warping cabane. Note the bracing and steel wheels and the thick wires to the cloche.

the distance pieces of the *fuselage*, thereby making the cross bracing less liable to give, and also preventing the distance pieces from splitting at the bottom.

"The floor has had four pieces of wood screwed on the underneath side, making it less liable to split.

"The elevating tail has stronger tubes to stay it to the *fuselage*, and the *fuselage* is stayed from one side to the other where these are bolted on, thus taking the strain off the cross-bracing to a certain extent.

"The body is composed of aluminium, left bright and finished off with copper rivets. It tapers off behind the pilot's seat to a tail. Doors are fitted on each side of it for cleaning the tanks, &c., and

the shield over the engine leads into it, as can be seen clearly in the photograph. In every direction accessibility has been aimed at, and it is interesting to note that the doors and engine shields can be taken off in two minutes. In the photographs the aluminium looks as if it were dented. This is not so, as it is only the reflection of the sun.

"A release clip is fitted to the skid and stayed to the *fuselage*.

"The ribbons are painted white, and also all the wires. The rest of the machine is painted a deep fast red, which shows up very well with the aluminium. All the wires were boiled in soda and water, in case of rust, and before being painted were coated with two coats of red lead."



AIRSHIP PILOTS' CERTIFICATES.

ARRANGEMENTS have been made whereby it is now possible to obtain instruction in this country for the F.A.I. pilot's certificate as granted by the Royal Aero Club, for the Willows Aircraft Co. are now giving the necessary course of seven ordinary balloon ascents and six flights in an airship in the vicinity of London.

This is an enterprise of the right kind that deserves encouragement, and we are pleased to record that three pupils, Mr. H. Barber, Capt. G. Bernal and Mr. R. W. Crocker have already taken their first lesson, while three other well-known members of the Royal Aero Club have signified their intention of joining the school.

The airship experience will be gained on a new three passenger dirigible of 35,000 cu. ft. capacity driven by a 60-h.p. eight-cylinder motor and the instructor will be Mr. E. T. Willows, who is the only holder in England, in a private capacity, of an airship pilot's certificate.

The new venture, as we have remarked, is one thoroughly deserving of encouragement, and we hope that many of those who have already gained their pilot's certificates for flying, will take this opportunity of completing their knowledge of the art of aerial navigation. Dirigibles have been very much to the fore just lately, and the latest move on the part of Germany has given us no opportunity of forgetting their potential importance. A knowledge of dirigible ballooning should

be of first-class importance very shortly, particularly with members of the Royal Flying Corps, and we can only hope that this private venture may go forward to a well assured success. For the convenience of those who are interested to know the details, we give below particulars of the conditions under which pilots can secure the Royal Aero Club certificate.

The Royal Aero Club of the United Kingdom will grant certificates in accordance with the regulations of the Fédération Aéronautique Internationale to candidates who have complied with the following rules:—

1. Possess an aeronaut's certificate for airship pilots, which will be granted when the following tests have been accomplished:—

- a. Five ordinary ascents in a free balloon.
- b. One sole ascent of at least one hour's duration.
- c. One night ascent of at least two hours' duration between sunset and sunrise.

The candidate must furnish satisfactory evidence of the accomplishment of the above tests.

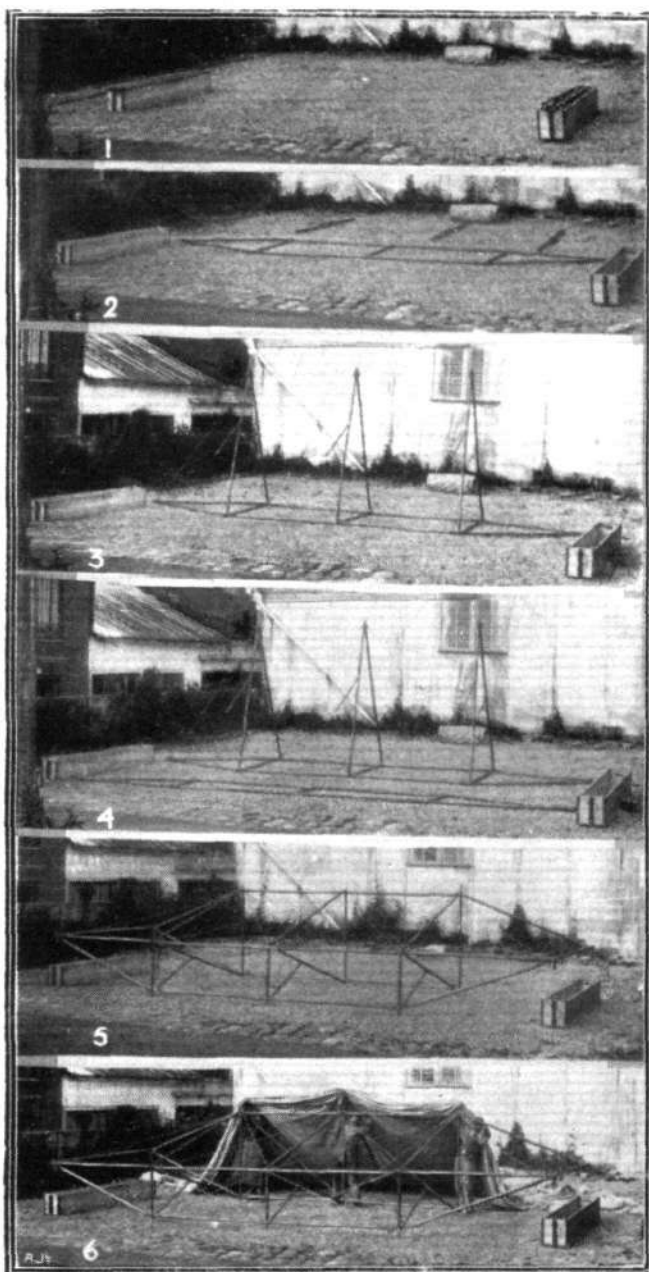
2. Furnish a record of six ascents made in an airship on different dates, one being of at least one hour's duration and three under the control of the candidate.

3. The application must be signed by two airship pilots who have been present at not less than three of the departures and landings of the candidate.

4. The Committee of the Royal Aero Club will decide if the candidate has qualified for a certificate, but reserves the right to refuse the same, or withdraw the same, at any time without giving reasons.

HERVIEU TRANSPORTABLE TENTS.

IN a recent issue we referred to the demonstration at Farnborough, before officials of the Royal Flying Corps, Admiralty, Aircraft Factory, Ordnance and Medical Departments, of a new form of transportable tent, and we are now able, with the assistance of a series of photographs, to give our readers a very full impression of these



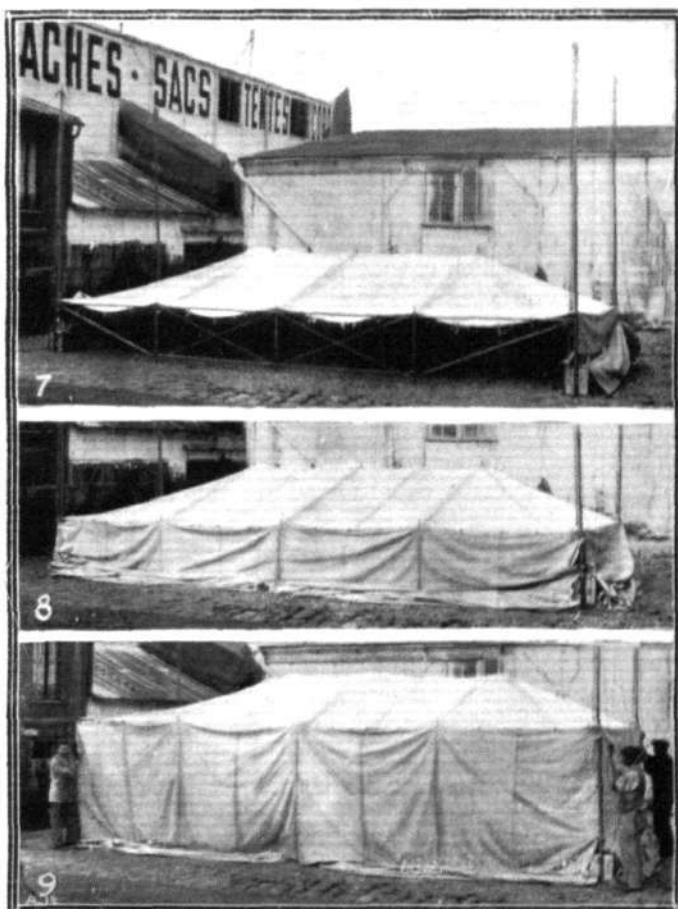
tents, and an explanation of the manner in which they are erected.

In picture 1 it will be seen there are two boxes, the dimensions of which are roughly 10 ft. long by 1 ft. by 1 ft., which contain the cold-drawn welded steel tubes of which the girder roof and uprights of the tent are entirely constructed. In the background is a white roll, which is the tent itself. The first operation is to place the two boxes on the ground, approximately as far apart as the tent is wide (in this instance about 40 ft.), leaving the rolled-up tent midway between them and some 45 ft. in the rear. The various tubes packed in each box are then taken out and laid on the ground, so that each one of different shape and size may be easily recognised,

preparatory to commencing the building up of the girder roof, the preliminary operation of which is shown in photo 2.

Here it will be seen that tubes have been joined together in the shape of a rectangle with two triangular ends. Each small transverse tube has a solid spiked end, which passes through lugs in the extremities and parts of the other tubes where shown joined up in the picture. Some wiring in this structure which is not visible in the picture is arranged to assist in holding the parts together, and by turning a double-ended screw on the small central transverse-tube, this whole section is tightened up and made virtually rigid.

Photo 3 shows the addition of three more sections, and in this picture some of the wiring can be plainly seen. Photo 4 shows another section somewhat similar to the first, put together in front of that already built up, and this last part is attached to the upper points of the larger structure, and to the extremities of the three small metal-hinged arms, which may be seen projecting from three of the main metal tubes. Photo No. 5 shows this operation completed, and also shows the girder roof in its proper form and position for the tent to be put over it, which is the next operation performed, as shown in photo No. 6. It will be noticed by closely examining the photo that small solid ends appear at the extremity of each of the vertical uprights, and to each of these is placed a corresponding hole in the tent, all of which holes are



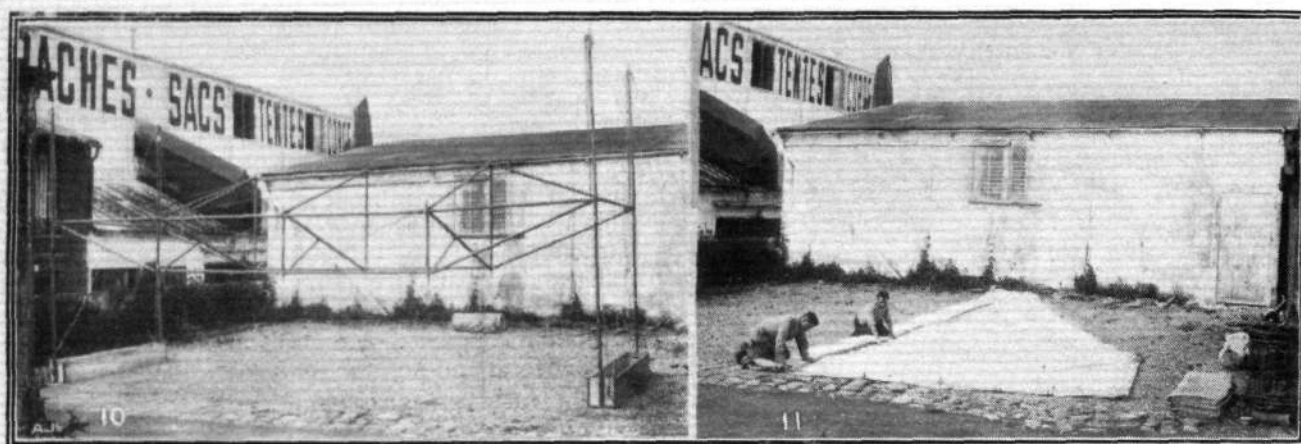
strengthened by leather patches with metal thimble centres.

The two boxes are now placed accurately under the four extreme corners of the girder roof, so that the

sockets at each end of the box are vertically below the sockets in the corners of the roof. The four main uprights of the tent (which are constructed of two tubes fitting into one another, each about 6 ft. 6 ins. long) are then put through the sockets in the roof corners, and let down into the sockets on the boxes. Attached to the top of each of these uprights is a small tackle, the bottom block of which is hooked to a lug at each corner of the roof.

Photo No. 7 shows the tent in this condition, and it will be noticed that the front of the tent top only remains

about 40 ft. wide by 45 ft. deep and 12 ft. high to the lower roof girder. It will thus comfortably house any ordinary type of monoplane and a biplane up to the size of, say, a BE 2. Each box when fully loaded with metal tubes for this tent weighs approximately 300 lb., which is also roughly the weight of the tent itself. With three handles on each side of a box, six men can easily carry it at a fairly rapid walk. The tent itself is packed in a cover, which likewise has three handles on each side, and can be transported with equal facility. It can easily be understood that after a little practice four or five



to be fixed along the top main girder in front by straps and buckles. When this is complete, the two front curtains of the tent are fixed on similarly over the three vertical uprights, and along the horizontal girder, by straps and buckles, as illustrated in photo No. 8. While a couple of men are fixing the straps and buckles, two or three others are employed in filling the boxes with bags of sand, if available, or if not, with earth, stones, rocks, or any solid weights that can be obtained. Each box will hold in this manner a weight of probably 300 lb., and thus a solid foundation is procured for the tent, obviating the necessity of using numerous stays and pegs, an advantage which cannot be over-estimated when one thinks of the extreme difficulty, if not impossibility, of employing pegs on either rocky or sandy foundations.

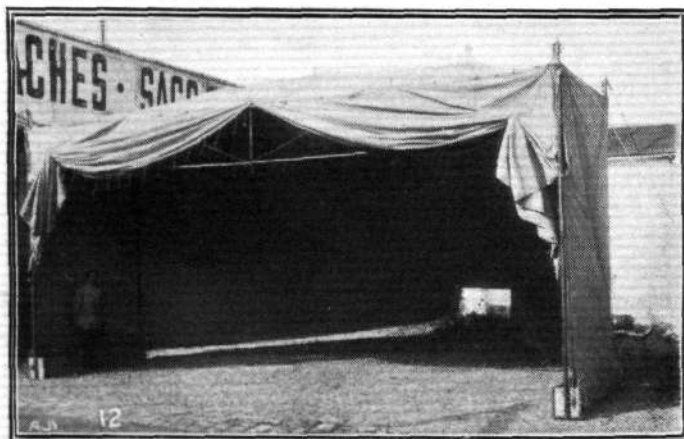
The tent is now ready to be hoisted, this operation being performed by one man at each main upright. Photo No. 9 shows the tent hoisted halfway, and No. 12 shows it in its final position, with the front curtains clewed up. From the top of the rectangular-shaped girder roof, the tent runs backwards to an aperture about 4 ft. square, and this is built up with two vertical metal posts and one horizontal girder, to the upper extremities of which tackles are fastened, the other ends of which are hooked to stakes firmly driven into the ground, and then the whole of the back of the tent is drawn taut by hauling on these tackles. Another method of fixing the back of the tent that may be employed is to attach the four corners of the back aperture to the back of a motor car, which is then slowly driven ahead until all is taut, when the brakes are immediately applied to the car and it is allowed to remain there.

Picture 10 gives an interesting skeleton view of the girder roof hoisted halfway on the four uprights without the tent being placed over it, and the picture 11 shows the tent half-rolled up on the ground preparatory to being packed away, for which operation both sides are rolled in to the centre to a width of about 4 ft., and then the long strip thus obtained is made up into a roll, as seen at the back of the first photo of the series.

The hangar which is represented in these pictures is

smart men would have no difficulty in erecting a tent such as this in less than a quarter of an hour, and, as a matter of fact, the five members of the Royal Flying Corps, who had only handled the tent once before the day of the demonstration at Farnborough last week, succeeded on that occasion in completing the erection of the tent in just 27 mins. This in itself is eloquent testimony of the real transportability, lightness, and utility of this new system of tent construction.

It should be remarked that the Hervieu tents, although manufactured in all sizes up to 55 ft. in width, and suit-



able for housing virtually every known type of aeroplane, are not designed simply and solely for aviation purposes, but are being constructed in all shapes and sizes, from 6 ft. square upwards, and it seems probable that whilst they should be of immense use to all branches of the army, they will have an even wider range of use for ordinary camping work, mining expeditions, and any other purpose for which tents are required, when lightness, portability, strength and proof against bad weather are the main attributes which it is desired to obtain.

The concession for Great Britain for these tents is in the hands of Messrs. Delacombe and Marechal, Carysfort, West Kensington, W.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 1st inst., when there were present: Sir Charles D. Rose, Bart., M.P., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Col. J. E. Capper, C.B., R.E., Major J. D. B. Fulton, Col. H. C. L. Holden, C.B., F.R.S., Prof. A. K. Huntington, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. C. F. Pollock, Com. C. R. Samson, R.N., Mr. R. W. Wallace, K.C., and the Secretary.

Election of Chairman.—Mr. J. T. C. Moore-Brabazon proposed the re-election of Sir Charles Rose, Bart., M.P., as Chairman of the Club for the ensuing year. The motion was seconded by Major J. D. B. Fulton, and carried unanimously.

Sir Charles Rose explained that owing to his many other engagements, he feared he would not be able to give the necessary time that the position of Chairman demanded. He much regretted, therefore, that he did not see his way to accept re-election.

The question of the election of Chairman was adjourned till the next meeting.

New Members.—The following new members were elected:—Lieut. D. L. Allen, Charles E. Best, Ralph Bingham, Capt. Loftus A. Bryan, J.P., D.L., 2nd Lieut. John Eden, Arthur Ewing, H. Unitt Lavarack, Pierre Marechal, H. Arnold Pallant, Harold Robinson, Dr. D. E. Stodart, and David Tod.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

- 444. Serjt. J. Kemper (Maurice Farman Biplane, Central Flying School, Upavon).
- 445. 1st Class Air Mechanic J. C. McNamara, (Maurice Farman Biplane, Central Flying School, Upavon).
- 446. Leading Seaman Philip Ephraim Bateman, R.N. (Maurice Farman Biplane, Central Flying School, Upavon).
- 447. Lieut. Raymond Fitzmaurice, R.N. (Short Biplane, Central Flying School, Upavon).
- 448. Lieut. W. F. Robertson Dobie (Bristol Biplane, Bristol School, Brooklands).
- 449. Lieut. Neville Osborne, R.F.C. (Caudron Biplane, Ewen School, Hendon).
- 450. Lieut. Guy Blatherwick, R.N. (Bristol Biplane, Bristol School, Brooklands).
- 451. Lieut. Wilfrid Picton-Warlow (Bristol Biplane, Bristol School, Brooklands).
- 452. Arthur B. Ashford Thomson (Bristol Biplane, Eastbourne Aviation School, Eastbourne).

Letter from the Aero Club de France asking the Club to give its sanction to the issuing of Aviators' Certificates to Major E. M. Maitland and Mr. Charles Reynolds was read and the necessary permission granted.

Re-election of Stewards of the Club.—On the motion of Mr. J. T. C. Moore-Brabazon, seconded by Major J. D. B. Fulton, the following Stewards of the Club were re-elected for the current year:—

The Rt. Hon. The Earl of Lonsdale Sir Charles Henry, Bart., M.P.
Admiral Rt. Hon. Sir Edward H. Sir Charles D. Rose, Bart., M.P.
Seymour, P.C., G.C.B., O.M., Hon. Arthur Stanley, M.P.
G.C.V.O.

ROYAL FLYING CORPS.

The following appointments were announced by the Admiralty on the 28th ult.:—

Lieuts. C. E. Maude, F. G. Brodribb, W. G. Sitwell, C. H. K. Edmonds, A. W. S. Agar, and A. B. Gaskell, to the "President," additional, for course of instruction at the Central Flying School, to date May 17th.

Capt. H. Fawcett, R.M.L.I., and Lieut. G. H. V. Hathorn, R.M.L.I., to the "President," additional, for course of instruction at the Central Flying School, to date May 17th.

The following appointments were announced by the Admiralty on the 31st ult.:—

Lieut. S. D. A. Grey, to the "Actæon," additional, as flight commander in command of Calshot Naval Air Station, to date March 29th.

Sub-Lieut. J. L. Travers, Royal Naval Reserve, to the "Actæon," additional, as flying officer, for Calshot Naval Air Station, to date March 29th.

The following appointment was announced in the *London Gazette* of the 1st inst.:—

Daily Mail Prizes.—The Chairman reported that he had transmitted the following telegram to Lord Northcliffe:—

"The announcement in your to-day's issue of your magnificent offer of prizes for a circuit of Great Britain by hydro-aeroplane and flight across the Atlantic, affords further proof of the patriotism and generosity of the *Daily Mail* in all progressive movements, and especially in the development of aviation, about which the public is so much concerned at the present time in connection with the defensive security of the country. The assistance of the Royal Aero Club will be entirely at your disposal as in the past."

and the following reply had been received:—

"Warmest thanks for your extremely kind telegram."—NORTHCLIFFE.

The Secretary reported that he had that day had an interview with Lord Northcliffe, who had decided to defer consideration of the regulations to govern the *Daily Mail* Prizes until after the Hydro-aeroplane Meeting now being held at Monaco.

Sub-Committees.—The Finance Committee was appointed as follows:—Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Prof. A. K. Huntington, Mr. A. Mortimer Singer, Mr. R. W. Wallace, K.C.

The appointment of other Sub-Committees was deferred till the next meeting.

Aeronaut's Certificate.—The following Aeronaut's Certificate was granted:—

No. 30. Lieut. F. L. M. Boothby, R.N.

Airship Pilot's Certificate.—The following Airship Pilot's Certificate was granted:—

No. 16. Lieut. F. L. M. Boothby, R.N.

Federation Aéronautique Internationale.

The F.A.I. has just issued the official list of certificates granted up to December 31st, 1912, to pilots of aeroplanes, airships and balloons by the different Countries forming the Federation. The following figures have been tabulated from the list:—

	Aeroplanes. Aviators' Certificates.	Balloons. Aeronauts' Certificates.	Airships. Airship Pilots' Certificates.
Argentina Republic...	15	13	—
Austria ...	84	86	24
Belgium ...	53	55	2
Denmark ...	8	7	—
Egypt ...	1	—	—
France ...	966	264	23
Germany ...	335	909	22
Great Britain ...	376	32	11
Holland ...	26	17	—
Hungary ...	7	—	—
Italy... ..	186	67	13
Norway ...	5	5	—
Russia ...	162	4	1
Spain ...	15	30	2
Sweden ...	10	17	—
Switzerland ...	27	30	—
United States ...	193	42	3
166, Piccadilly.	HAROLD E. PERRIN, Secretary.		

R.F.C.—Military Wing.—Lieut. George I. Carmichael, Royal Artillery, to be a flying officer, and to be seconded. Dated March 11th, 1913.

The following appointment was announced by the Admiralty on April 5th:—

Sub-Lieut. J. Babington, to the "Actæon," additional, as flying officer for Isle of Grain Air Station, to date March 27th.

Australian Flying Corps.

LIEUT. HARRISON has now sent out to Australia the two 35-h.p. Anzani-Deperdussins, and he is staying on until the couple of B.E. biplanes, which are being built by the Bristol Co., are ready. The Australian military authorities have now decided not to have the headquarters of the Flying Corps at the new capital, Canberra, as it is about 2,500 ft. above sea level, and the neighbouring mountains might set up remous. The aerodrome will probably be near Melbourne, where there is an area of over 30 square miles of country, compared with which Salisbury Plain would be considered mountainous.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

On Tuesday, last week, Lieut. Gordon Bell, carrying his mechanic as a passenger, arrived from Eastchurch on a new Short biplane, en route for Farnborough, where the machine is to be used for school work. The 58 miles was covered in just over an hour—an excellent cross-country flight for a new machine.

Mr. Raynham, on Thursday, did further excellent tests on the new Flanders biplane, the machine quickly climbing to over 1,000 ft. Mr. Barnwell made a fine flight on the Vickers monoplane, at an altitude of over 3,000 ft. Lieut. Blatherwick, one of Mr. Merriam's most promising pupils, successfully carried out his *brevet* tests on a Bristol biplane.

The weather conditions were so bad on Friday that only one machine—a Vickers-Farman biplane—piloted by Mr. Barnwell (who carried one of his pupils as a passenger) was out.

Very little flying was possible on Saturday after the early morning, but just before dusk Mr. Raynham made some further tests with the Flanders biplane.

On Sunday afternoon the weather cleared up, and the finest flying of the year was seen, about a dozen machines being up at different times. Mr. Barnwell commenced the afternoon's work with a fine cross-country trip on the Vickers monoplane. Then Mr. Hamel flew in from Hendon with Miss Trehawke Davies in that lady's 70-h.p. Blériot tandem machine and effected a graceful landing after one of his famous spiral descents. At the conclusion of another fine exhibition, including a display of "aerial leap-frog" over the stationary machines, which he skimmed by inches only, he flew back to Hendon with his lady passenger, the machine travelling at a great pace with the wind behind. Mr. Barnwell was out again on the Vickers-Farman biplane, and afterwards did straights with a pupil on the school monoplane. Mr. Merriam was very busy on the Bristol biplane, doing several good solo flights, afterwards taking up several pupils, one of whom, Lieut. Picton Warlow, carried out his *brevet* test in good style. Mr. Hawker flew strongly and well for some time on the Sopwith biplane, and also indulged in some "aerial leap-frog," astonishing the spectators by the ease with which he manipulated his machine, and making a fine and well-judged descent from a great height with propellers stopped. A great sensation was caused at teatime by the unexpected arrival from Hendon of those famous French pilots, both, of course, on Farman machines, MM. Chevillard (with a passenger) and Verrier, the former making the people's hair stand

on end by the acute angles at which he manipulated his machine, which seemed to literally turn upside down, whilst M. Verrier made a very fine spiral descent with propeller stopped. After a short stay, M. Chevillard with his passenger flew on to Farnborough. Mr. Raynham made some further good tests on the Flanders biplane.

Bristol School.—On Monday, last week, Merriam out very early for trial, then ascending as passenger with Lieut. Picton Warlow, giving pupil landing practice. Lieut. Picton Warlow afterwards out alone for good solo, landing well. Merriam was on another machine, giving tuition to Lieuts. Peirse, Duncan, Gordon, McClellan and Morgan, sitting behind the latter pupil, who is now quite ready to fly alone. Lieuts. Robertson Dobie and Blatherwick each put up a good solo, landing excellently. Merriam was busily occupied taking pupils for instructional trips, after which he set out, with Lieut. Blatherwick as passenger, for a short cross-country flight, going round Chertsey, but fog drove him back to the aerodrome.

Merriam was up for a test after breakfast, but found conditions too unfavourable for school work. In the afternoon Merriam again set out for a test, but still found weather rather bumpy. Later on Lieuts. Gordon and McClellan were given tuition flights by Merriam. After another trial Merriam started off for the handicap race, but unfortunately went out of his course, so he contented himself by reaching an altitude of 2,000 feet, and landing by means of a spiral *vol plané*. Lieut. Robertson Dobie was out for a solo and afterwards set out for his certificate, carrying out the necessary tests in really great style.

Fog was very thick up to 9.30 on Tuesday. Lieut. Peirse was passenger to Merriam in the test flight, but the air was found too bad for pupils, and work was carried on in the hangars. Merriam made a solo in the afternoon, but no improvement had taken place.

On Wednesday, Merriam was up very early for a trial, after which Lieut. Picton Warlow ascended for several good straight flights, whilst Lieut. Blatherwick made a good circuit. Lieut. Peirse was meanwhile taken for tuition by Merriam, who was up behind Lieut. Morgan for straights and rolling practice.

Merriam took Lieut. Picton Warlow for the usual trial trip on Thursday, giving pupil instruction in the making of right and left hand turns. This pupil was afterwards out and accomplished some very fine turns, finishing up with a good landing. Merriam went up as passenger to Lieut. Morgan on straights, this pupil then making his first solo in fine style. Lieut. Peirse was also with the instructor as passenger, and controlled the machine really well. Lieut. Picton Warlow was doing some splendid right hand turns, Lieut. Morgan taking another machine on straights. Lieut. Peirse received instruction in banking, right and left hand turns and landing. Several very nice figures of eight were carried out by Lieut. Picton Warlow, this pupil showing evidence of remarkable progress. Lieut. Morgan, who is also getting on with his work, out for a number of good straights. Merriam wound up the morning's work with a solo.

After breakfast, school work was resumed, Lieut. Blatherwick setting out for his certificate, the tests for which he passed excellently, maintaining a good height throughout and landing perfectly. The manner in which this pupil passed his tests speaks volumes for the instruction given pupils at the "Bristol" schools. Merriam was out later on another machine as passenger to Lieuts. Gordon, McClellan, and Peirse on straights for landing practice. Lieut. Picton Warlow was, in the meantime, out for several good circuits. Lieut. Morgan getting in a number of fine straights. Merriam went for a solo and found wind too bad for further work.

Merriam was out testing the latter part of the afternoon, taking Lieut. Picton Warlow, making three circuits, but found conditions too bad for pupils to go alone. Tuition was given to Lieuts. Peirse, Gordon, McClelland, and Broder (new pupil). Lieut. Morgan made some good straights, but darkness put an end to further work.

Wind and rain all the morning on Friday. Outdoor work impossible. About 5 o'clock in the afternoon wind dropped slightly and Merriam made a good trial with Lieut. Peirse as passenger, but found things too bad for school work.

On Saturday, Merriam made a couple of circuits round to wake up pupils. Lieut. Broder was taken up for tuition, whilst Merriam sat behind Lieut. Peirse on straights. Lieut. Picton Warlow carried out some excellent figures of eight, Lieut. Morgan doing some very fine straights at quite a good height. Lieuts. Peirse and Broder were taken up by Merriam, whilst Lieut. Picton Warlow was on another, practising landings. Merriam wound up the morning's work by taking a prospective pupil for a trip. No flying was possible in the afternoon, the weather being very bad.

Flying impossible all day on Sunday, owing to the boisterous state of the weather.



Lieut. Blatherwick, who secured his Royal Aero Club certificate in first-class style at the Bristol Brooklands School.

Vickers School.—Monday, last week, Barnwell and Knight, on biplane to Chertsey Bridge and back. Mr. Knight doing straights on No. 3. Barnwell testing No. 3 managed to coax a couple of circuits out of her, then Knight, the other pilot, did some straights carrying a passenger, the machine having renewed its youth after overhaul. Barnwell propeller testing on No. 5. In the afternoon Barnwell and Knight testing machines for race.

Barnwell, Tuesday afternoon, testing propeller on biplane. Too windy for pupils.

Barnwell and Knight out before breakfast Wednesday testing school biplane and No. 3 monoplane. Barnwell out in the forenoon on biplane testing valve adjustments.

Thursday, Barnwell and Knight on biplane before breakfast. In the afternoon Mr. Barnwell on No. 5 for about 20 mins.

Friday afternoon, Barnwell on biplane with Mr. Waterfall, and next day Knight out first on biplane solo. Then Barnwell with Mr. Waterfall in passenger's seat. Captain Wood on biplane, Barnwell again with Mr. Waterfall promoted to front seat getting on very well. Meanwhile, Mr. Blatherwick in No. 3 mono., doing very well at his first attempt on monoplane, getting off the ground after a couple of taxi straights.

Barnwell, Sunday afternoon, on No. 5 at 3,000 ft. for half an hour. Then Barnwell on biplane with Mr. Waterfall, and Knight on No. 3 mono. with Mr. Knight. Barnwell on No. 3 with Mr. Blatherwick, who will in future be able to go alone. Knight on biplane with Mr. Waterfall, who is also near the solo stage.

Eastbourne Aerodrome.

WEDNESDAY, last week, Fowler was out shortly after 6 a.m., and after making a test flight he took up Mr. Lawrence Fry, a new pupil, for instruction. Hucks also put in some practice. By 8 a.m. the wind had freshened considerably, and continued to blow until 4.30 p.m., when Fowler was able to start school work again.

Thursday, Messrs. Roberts, Fry, Gassler, and Hucks all turned out early, and quite a lot of useful practice was put in without any mishap. In the afternoon, Fowler flew along the front, and made several circles off the Pier head; on returning he took up in turn Messrs. Fry, Roberts, and Thornley for instruction. Gassler was also out on the 35-h.p. Anzani, and put up an excellent flight, his banked turns being particularly good.

Friday, no flying was possible owing to the wind. Mr. Rainey joined the school in the afternoon, and was given some instruction in the sheds.

Saturday, Messrs. Fry, Rainey, and Hucks were down at the ground early, but their energy was unrewarded, as the wind freshened very quickly, and Fowler, after a test flight, decided that it was too rough. The wind did not go down till about 6 p.m., by which time everybody had left, so nothing was done.

Sunday, the morning was rough, but by 4 p.m. the wind calmed down, and after one or two short trips, Fowler took up Mr. Rainey for his first flight. They had not been up two minutes, however, when one of the inlet valves gave out, so Mr. Rainey's flight was somewhat curtailed. A new valve was soon fitted, and Fowler started off again, but his luck was dead out, as one of the connecting-rods broke this time, causing him to make a somewhat hurried descent, at the conclusion of which he rolled into a ditch, and broke one of the skids and a couple of chassis struts.

The following pupils are making good progress.—Messrs. Roberts, Fry, Napier, Rainey, Morkill and Thornley. Messrs. Roberts and Morkill are nearly ready for their certificates.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—On Tuesday, last week, after Mr. Noel and Mr. Manton testing the various machines, the pupils got in good practice, Mr. W. Birchenough doing fine circuits on No. 7 'bus, Mr. North, a new pupil, rolling.

On Wednesday, pupils out very early, Mr. Lan Davis rolling for some time, after which he did a little straight flying with Mr. Manton, Mr. Carr also doing straights under Mr. Manton, Mr. North rolling. Mr. T. Bayetto now doing straights on No. 4 monoplane under Mr. Cheeseman, Mr. Lan Davis also making straight flights.

Blériot School.—On Monday, last week, no school work was able to be done owing to the Easter Race Meeting. Mr. Slack entered for the cross-country race on the 50-h.p. Gnome-Blériot, but was not successful owing to the bad pulling of the motor, although he flew exceedingly well in a trying and gusty wind. The following day was fine and frosty, and Lieut. Loftus Bryan was out early, doing very nice straight flights on No. 1, and M. R. Desoutter was also doing very good straights on the same machine.

Wednesday was windy, and no school work was possible, but on the next day Capt. Cox and Mr. Williams were both out on the taxi, and did very well, despite the trouble caused by a side wind.

Lieut. Loftus Bryan and Messrs. R. Desoutter and Clappen were doing excellent straight flights on No. 1 until stopped by the rain. Friday and Saturday were blank as far as school work was concerned, but in the afternoon of the latter day Mr. Hamel came

down to the aerodrome, and did some beautiful flights with Miss Trehawke Davies on her tandem Blériot.

British Deperdussin School.—Lieut. Spencer Grey took the 100-h.p. Dep. out for a 25 min. flight, Wednesday, last week. There was a fairly strong wind blowing, but the machine rode through the gusts with ease.

Lieut. Porte tried the new Admiralty 80-h.p. Dep. for the first time, Thursday. The machine flies splendidly, climbing and gliding very well. Mr. Bauman 45 mins. rolling and hops on No. 2. He took the machine up to 15 ft., made a sharp left-hand turn and a heavy landing, the only thing which was broken was a bit of the tail skid.

On Sunday, Lieut. Porte had his 100-h.p. 'bus out, and made several flights, carrying passengers on two of them. Mr. Whitehouse gave an 18 min. exhibition flight later on in the evening.

The fog lifted slightly at 7 a.m., Monday, when Mr. Bauman started school work by two rolling straights and hops. He had several other turns, making his total time on the machine 30 mins. Lieut. Bourke had his first lesson after a long leave of absence, doing very well. He had 40 mins. on the machine. Mr. Barron, a new pupil, had his first lesson, rolling for 20 mins. He is doing quite well for a beginner, but cannot get into the way yet of steering with his rudder instead of the wheel. In the afternoon, Lieut. Bourke, Messrs. Bauman and Barron each 5 mins. on No. 2, but fog came down and stopped further work.

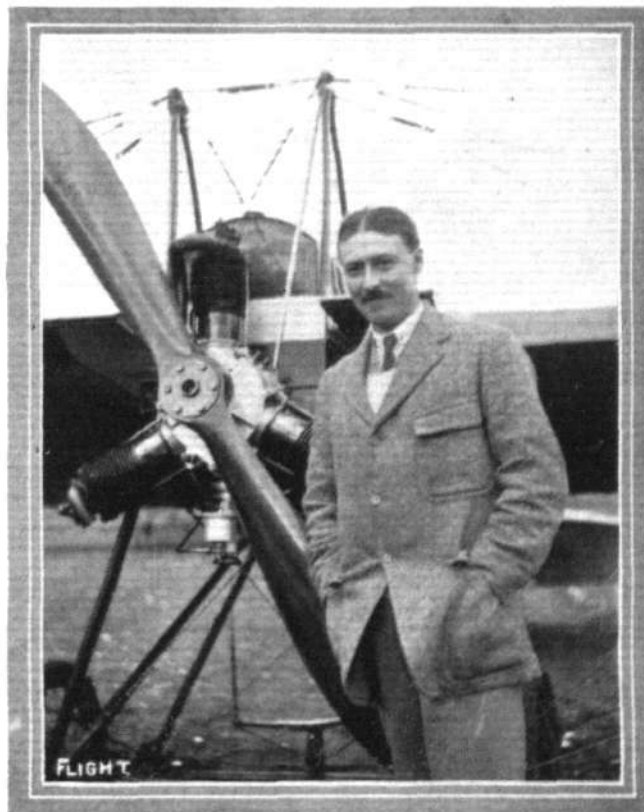
W. H. Ewen School.—(Quite a good week's work has been got in at the school, and on all possible occasions when there has been any chance of flying, the Caudron biplanes have been prominent, as many as five Caudrons being in the air at once.

On Monday, last week, the school was out at 6.30 a.m., and under the instruction of M. Baumann, M. Zubiaga put in some capital practice on the 28-h.p. Caudron. Mr. Lewis Turner was on the 35-h.p. Caudron, and afterwards Lieut. Osborne, R.N., flew several circuits in an excellent manner on the same machine.

The school was out at 6.10 a.m. Tuesday, when M. Baumann made a flight on the 35-h.p. Caudron, passing up Collindale Avenue to try and wake up some late pupils. Lieut. Osborne was doing circuits and figures of eight on the 35-h.p. Caudron, while M. Zubiaga was making some splendid straight flights on the 28-h.p. Caudron; Mr. Pendlebury put in several good straights.

Much too windy Wednesday for pupils. Lieut. Spencer-Grey was doing some excellent flying on the 70-h.p. Gnome-Caudron.

Thursday was a big day at the school, and from 5.30 a.m. till dusk, the school was busy under the instruction of M. Baumann. The event of the day was the passing of all his tests, after only six



Lieut. L. C. Hordern, Lancashire Fusiliers, who has just passed for his *brevet* on a Deperdussin monoplane at Hendon.

days' practice, by Lieut. Osborne, on the 35-h.p. Caudron. Flying at an altitude of fully 250 feet he handled the machine in a brilliant style, and both his landings were almost dead on the mark. M. Baumann was also testing the *brevet* machine, on which Commander Schwann made a short flight later. Commander Schwann then made a brilliant flight of 20 minutes on the 70-h.p. Gnome-Caudron, after which Lieut. Spenser-Grey with Mr. Sassoon as passenger, flew the same machine for 45 mins., and later again for 20 mins. Lieut. Eustace L'Estrange Malone put up some fine flying on the 80-h.p. Gnome-Caudron, being in the air 45 mins. On the same machine, Lieut. Spenser-Grey then went up for an hour's flight accompanied by Mr. Sassoon as passenger.

Messrs. Zubiaga and Stewart were doing some very fine straight flights on the 28-h.p. Caudron, while Mr. Pendlebury and Lieut. G. Adams were doing some good rolling practice and straights. Mr. Torr was also on the 35-h.p. Caudron, putting in some capital work in straight flights and half-circles. Later in the afternoon, Lieut. Spenser-Grey was again on the 80-h.p. Gnome-Caudron for an hour, and immediately on descending, he started off on the 70-h.p. Gnome-Caudron for Eastchurch, but had to return on account of the fog.

There was no school work on Sunday, but Mr. Lewis Turner was doing several fine exhibition flights, one of which last for 50 mins., at a height of 3,000 ft., while the 60-h.p. Caudron was kept busy all the afternoon carrying passengers.

Salisbury Plain.

Bristol School.—Pixton made an early test on Monday, last week, after which Lieut. Griffiths was taken for biplane tuition, this pupil then making two solos. Mr. Tod was taken for a couple of solos in a biplane and "sociable" monoplane. Later on Mr. Pixton did a short biplane solo, and two flights on one of the "sociable" monoplanes. Lieut. Griffiths went on a biplane for a solo of fully 20 mins., putting up quite a good show. Lieut. Read went on another machine for two solos of 15 mins. each.

No flying all day on Tuesday, conditions anything but favourable, work busily carried on in the hangars.

On Wednesday, by the middle of the afternoon the conditions improved somewhat, and Pixton went out, taking Lieut. Bromet, R.N., as passenger, remaining out for fully 20 mins. Mr. Paschen carried out an excellent solo in a side-by-side monoplane, Pixton again taking up Lieut. Bromet. Jullerot ascended for a solo in a Bristol 50-h.p. monoplane, followed by Lieut. Griffiths on a biplane and Mr. Paschen in a side-by-side monoplane. Lieut.

Read was out later for a good solo round Fargo, as also was Mr. Tod in a "sociable" Bristol monoplane, Jullerot being passenger with the latter. Darkness prevented further work.

Lieut. Bromet was first pupil out on Thursday, under the instruction of Pixton, who later on made a solo. Lieut. Read was getting in some useful rolling practice on a single-seater monoplane, Lieut. Griffiths following on the same machine. Jullerot took Mr. Tod for instruction on the side-by-side monoplane, whilst Mr. Paschen ascended at the same time in a 50-h.p. tandem monoplane and made a good solo.

Pixton was first out in the afternoon, taking Lieut. Bromet for instruction, making a long flight round Knighton Down, the pupil having charge of the hand control most of the time. This pupil has only been at the school a few days, and is progressing splendidly.

Rain, wind, and hail practically all day Friday, rendering flying impossible. Work was busily carried on in the hangars.

On Saturday, Pixton was out first thing for the customary trial, afterwards taking Lieut. Bromet on the biplane. Lieut. Griffiths was out for a really clever solo, flying remarkably steady in the fairly strong wind. Jullerot took Lieut. Bromet for instruction, but the wind was considered too bad for further work. Rain and wind prevailed for the remainder of the day, and all thought of flying had to be abandoned.

Royal Flying Corps.—Wednesday of last week there was a change in the weather, and Lieut. Cholmondeley was out on Maurice Farman 214, making a useful flight over the new sheds at Mill Ball, which are now ready for occupation, Upavon and back to Larkhill. He was out again in the evening with a passenger, and when at a height of 3,000 ft. was flying for 2 mins. without using the controls.

Thursday was a fine morning for flying, and Lieut. Cholmondeley had the 214 out with Sergt. Bruce as passenger for instructions. At one landing several chassis wires were broken, but they were soon replaced. Major Higgins was out testing the new Farman biplane 268, which has an 80-h.p. Gnome motor, and made several good flights around the Downs. In the evening, Lieut. Porter and Capt. Allen were out on BE biplane 267, and got through a good deal of scouting practice around the Plains. Lieut. Cholmondeley with Major Higgins, on Maurice Farman 214, left for Farnborough, rising quickly to a height of 2,000 ft. Lieut. Cholmondeley left Farnborough for his return journey to Salisbury Plain, but on reaching Whitchurch was forced to land owing to his propeller breaking when at a height of 2,000 ft. Major Higgins also left Farnborough for Salisbury Plain on BE biplane 205. He was forced to land on reaching the Central Flying School at Upavon, owing to a pipe breaking, and on landing buckled a wheel. These details were quickly put right, and he was soon off again, and safely arrived at Larkhill in gusty winds.

Friday, Lieut. Cholmondeley arrived on biplane 214 in boisterous winds.

Saturday work confined to sheds.

On Monday the weather was ideal for outdoor work, and Lieut. Anderson was up on BE 205. On landing Lieut. Porter took charge, taking up Lieut. Chrysta for instruction. The latter officer then took over biplane and put up a good flight. Capt. Allen was out on BE 267, flying around the Plains. In the evening Major Higgins was out on Farman 268, followed by Lieut. Carmichael, who made two flights. Capt. Allen on BE 267 took up Air Mechanic Powell. Lieut. Porter on biplane 205 took up Sergt. Aldwanckle, of the Berks Yeomanry. The Royal Flying Corps are to go under canvas at Larkhill, for about a month previous to entering into occupation of the sheds at Mill Ball, Netheravon.



Prof. Petavel Lectures.

ON Monday last Prof. Joseph E. Petavel, M.Sc., F.R.S., delivered the first of a series of three lectures on aeronautics before the Royal Society of Arts. He dealt with the general laws of aerodynamics, the distribution of pressure on a wing surface, lift and efficiency of wings, resistance of spars and struts, and shape and efficiency of propellers. The next lecture will be given on Monday, and will be devoted to principles of aeroplane design, while the concluding lecture on Monday week will deal with problems of flight, meteorological conditions, &c.

Mr. Slack Crosses the Channel.

ACCOMPANIED by his little son, Mr. Robert Slack, on the 27th ult., flew across the channel from Dover to Calais on his Blériot monoplane. With an unfavourable wind he took three-quarters of an hour for the trip.

Mr. Hamel also Crosses.

DURING the afternoon of the 27th ult., Mr. Hamel made his ninth trip across the channel, flying on his Blériot from Dover to Calais. This is the 62nd time the English Channel has been crossed.



Mr. G. Lee Temple in flying rig at the Hendon aerodrome.

FLYING AT HENDON.

A GUSTY wind, rarely falling below 25 m.p.h., rendered it impossible for any of the contests that had been arranged for the Second Hendon Aviation Meeting last Saturday to take place. Those who faithfully visited the aerodrome, however, were not disappointed, for, as it happened, it turned out to be an interesting afternoon. At about 3.30 p.m., the 70-h.p. tandem Blériot monoplane, belonging to Miss Trehawke Davies, was wheeled out of its shed, and soon after Gustav Hamel took the pilot's seat, and Miss Davies seated herself behind him. After a preliminary run of the engine they started off, the monoplane rocking in the wind as it rose. Hamel steered the machine sharply round over the sheds, and as he did so a nasty gust of wind struck them, but with his usual remarkable skill and judgment he brought the machine to an even keel. For four minutes he flew about the aerodrome, but wisely did not attempt any of his "stunts" except in a mild sort of way. A few minutes afterwards Pierre Verrier brought out the Maurice Farman biplane, and, taking with him Capt. Tyrer as passenger, had five minutes hard tussle with the wind. After this the rain came down, with apparently a remarkably fine gliding angle, for it seemed to get at one everywhere. All this time one of the Aircraft Co.'s sheds was the scene of some active and interesting preparations. At about 12 noon that day a new Henry Farman military-type biplane had arrived in a large packing case from France. At 3 o'clock they started erecting it. It was both amusing and instructive to watch the various parts being assembled by some half-a-dozen energetic men—including the two vivacious pilots, Chevillard and Verrier—each having his own particular job, laughing, joking and talking the whole time. The French "mechanic" is indeed a fascinating character; he even imparts some of his liveliness to his English fellow-workmen! Gradually the biplane assumed its familiar appearance, and by 5.10 p.m. the job was finished. After some final adjustments to the controls had been made, the biplane was wheeled out of the shed, and at 5.40, the 80-h.p. Gnome running splendidly, Chevillard ascended 2 hrs. 40 mins. after they started erecting it. Chevillard made a circuit of the aerodrome, and then, being satisfied with the behaviour of the machine, proceeded to execute his remarkable evolutions—showing the confidence he has in both the machine and himself.

After this remarkable exhibition, Hamel ascended in his single-seater Blériot, and put up a fine performance, lasting about 10 mins. The wind still caused the monoplane to rock a good bit, but in spite of this Hamel managed to make several of his banked spirals. At the finish of his flight, he got caught by a side-gust, and appeared to just manage to keep the monoplane in hand. Chevillard then took up Miss Davies, and treated her to some exceptionally startling dives and switch-backs, all of which, Miss Davies told us when she came down, she enjoyed immensely. No more flights were made, as it was by then getting dark.

Sunday turned out nice and fine, with a not unpleasant wind of about 15 m.p.h. Although it was still wet under foot, the sun made things bright and warm, in fact, one was reminded of old times when some tables were laid for tea outside the Aero Restaurant, adjoining the aerodrome. Shortly after 3 o'clock, Chevillard started the first of a series of his exciting exhibition flights, during two of which he took up G. L. Temple and Louis Noel. Verrier was also out on the Maurice Farman biplane. At about 3.45 p.m., Hamel, accompanied by Miss Trehawke Davies, on the latter's 70-h.p. Blériot monoplane, left for Brooklands. After a trial flight on the 60-h.p. Anzani-Caudron, Lewis Turner ascended on the same machine at 4 o'clock with the intention of remaining aloft for one hour. Circuit after circuit he made, rising higher and higher, and then descending *en vol plané* to about 100 ft. or so. This he repeated from time to time until nearly 5 o'clock, when he landed, complaining of the hard work he had in keeping the machine from climbing all the time, so much so that his arm ached unpleasantly. While this fine little flight was in progress, Verrier and Chevillard left for Farnborough on the Maurice and Henry Farman biplanes respectively, each carrying a passenger. Lieut. Porte was also out with a passenger on the 110-h.p. Anzani-Deperdussin monoplane, while Marcus D. Manton made an excellent flight on the 70-h.p. Grahame-White biplane (H. Farman type) that has been sold to the Government. He took the machine up a good height, and made a very neat landing, but some further adjustments were required. In the meanwhile, Lieut. Porte made another flight in the Deperdussin, after which Louis Noel took up the "G.W." 70-h.p. machine, just as Hamel and Miss Davies were seen returning to the aerodrome, and Lewis Turner was landing after his long flight. Hamel landed at 5.10, reporting a pleasant journey. After this, flight after flight was made in rapid succession, and we cannot do better than give the following brief log of these flights, for it would take too much space to describe each one, and just think of it, what you get for

your money at Hendon:—5.10, Temple on 35-h.p. Caudron, short flights; 5.11, Hamel on single-seater Blériot for 5 mins.; 5.13, Noel with passenger on the 70-h.p. "G.W." biplane; 5.16, Turner up for 4 mins. on the 60-h.p. Caudron with a passenger; 5.24, Lieut. Porte, solo flight of 6 mins. duration on the Dep.; 5.35, Turner with passenger for 5 mins. on the Caudron; 5.44, Do.; 5.48, Hamel with passenger on two-seater Blériot for 7 mins., spirals and banks; 5.58, Hamel again out on two-seater Blériot, with Capt. Tyrer as passenger, making some remarkable spirals; 6, E. R. Whitehouse on the 35-h.p. Deperdussin for 15 mins., flying in excellent style; 6.5, Turner with passenger on Caudron for about 10 mins.; 6.10, Temple on his 35-h.p. Caudron flying high for about 8 mins.; 6.20, Hamel and Miss Davies on the tandem Blériot, executing astonishing banks, spirals, and switchbacks, at one time almost "carrying away" the roof of the first hangar. This, and another short passenger flight immediately after, was a grand finish-up for the day, which was in every way very pleasant.



To-day's Meeting at Hendon.

THE programme for the meeting at the London Aerodrome, Hendon, this (Saturday) afternoon includes two special events. The first is a speed handicap, the preliminary heats being four laps of the course, and the final of six laps. The second event is an altitude contest. In addition, there will be exhibition and passenger flights, and it should be noted that the charges are on a fixed tariff. For trips over the aerodrome, the fees range from two to five guineas, according to the length, while a cross-country trip to Elstree and back, about 16 miles, costs ten guineas, or to Brooklands and back, about 38 miles, twenty-five guineas.

Forthcoming Events at Hendon.

ON Saturday next the first Spring Meeting will be held at Hendon, while for the following Saturday, April 19th, special arrangements are being made with a view to stimulating a deeper interest by the people of London in aviation. It will be known as London Day, and the Lord Mayor and Aldermen of the City of London are to pay a special visit to the aerodrome, and invitations are also being sent to the mayors of the various London Boroughs and to representatives of the London County Council.



An American view of the world's progress in aviation.—
The New York Evening Sun.

ARMCHAIR REFLECTIONS.

By THE DREAMER.

Where are We?

OF all ways of earning a living surely nothing can approach that of dreaming for one, yet as I sit here to-night I am undone and cannot dream. The chair is not cosy, the cushions do not fit, the fire is burning brightly yet does not seem to give any warmth, and although I am alone in the room I have that eerie sensation that spiritualists call a "presence." I am alone I know because Clarissa has gone out to spend the money she dreams I earn by dreaming. Have you ever noticed what a lot of money wives dream their husbands earn when they want a new hat? Bless their little hearts we do not like to tell them the truth. Ah me!

Well, to-night I am filled with the spirit of unrest; I have had delusions and am inquisitive and want to know how things are going to be done and generally to interfere in things that I am given to understand do not, as one of the British public, concern me.

There is a little shop at the corner of Ludgate Circus where they feel your bumps and give you a plan view of your think-box, with your proclivities staked out like villa plots in a garden city, and I am going there to have the rule run over me, because I am quite sure I am not all there. For months now my particular form of brain-storm has taken the form of deluding me into the idea that we were short of aeroplanes, that other countries were getting ahead of us, that we wanted airships, that our ministers were asleep and letting us get behind, and I don't know what; and now it seems it was all the effect of my poor weak brain, and that everything is quite all right, and what isn't soon will be—no, that can't be right, can it? because, if everything is all right, what isn't must be right also. I mean to say, that if there is anything that isn't all right and soon will be, then this and the part that is already all right—Oh, I don't know, it's beyond me! I never could understand this "you've-got-it-when-you-haven't" juggling with figures business. All I know is, that if I want a special Scotch, and I have only got twopence, I have to have something else. But I suppose it is no business of mine. England does not belong to me, anyway—except the bit I've got in a flower-pot; and probably that's the lord of the manor's, if everybody had their rights.

Impossible.

Last week I gave you a word from the English language which I told you made for success, it was "enthusiasm." This week, I propose to give you a word that I think should be cut out of the language altogether, as it is responsible for any amount of failures simply from knowing that there is such a word; it is "impossible," as you will have gathered from the sub-title. Now, I am not going quite so far as to say that nothing is impossible, and on that footing I suppose it is necessary to have a word to explain certain positions that will crop up, but it is a bad word, and the less we think about it the better. The trouble is, we are very apt to jump to conclusions, and use the word to save ourselves the trouble of thinking further on a problem which, after all, perhaps is capable of solution. It is a nasty, lazy, mean, lay-the-blame-on-somebody-else sort of word, and worse than all it is often a liar. It will cause itself to be used where it has no business by popping up just when you were about to use one altogether different, and saying, "I am the one you want, I save you no end of trouble," and, like most, you take the line of least resistance and pop it in, but you know you have done wrong, you know you have been mean, you know you have not done yourself justice; and if you cannot do justice to yourself,

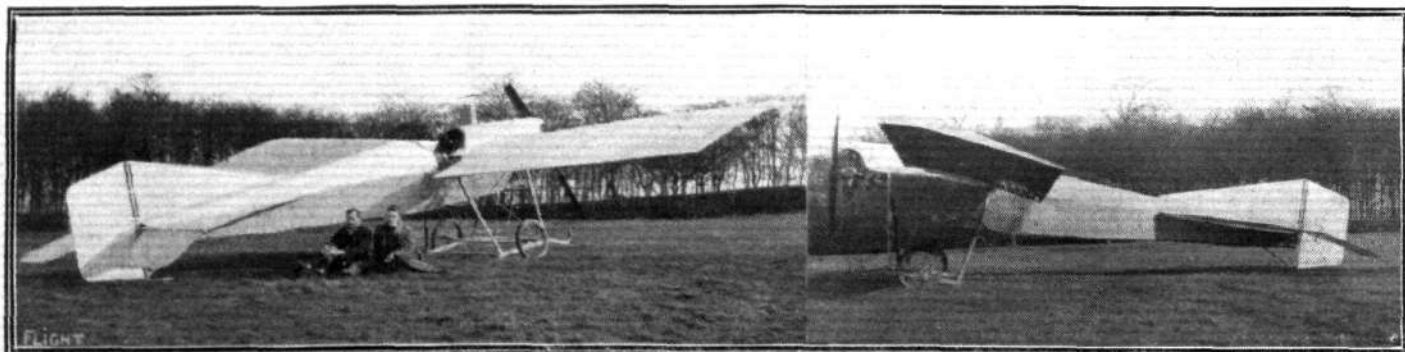
you certainly will not do justice to anybody; and, although you don't like it, you have to admit to yourself that you have slipped a notch downwards in your own estimation and you are on the down grade. Others, probably, will not notice this little slip of yours. They will take you at your face value, and your face value does not alter perceptibly with one little slip, but you have planted a germ that will grow like malignant cancer, and in time it will begin to show, and you will go down, down, down as sure as though you were in a quicksand, till you mistrust yourself; and when a man has no trust in himself, he is "down and out," as sure as that I shall miss my train in the morning if I get there after it has gone, and stands no more chance than a bandy girl in the town where she went to school.

I feel like being a father to you all this week so I will rub it in a bit more if you don't mind, and if you do mind I don't care because you don't know me from Adam and can't hit back, and if you like to think of me as a monument moulded from a substance composed of all the virtues rolled into one and case-hardened by experience you are welcome, and, after all, what I tell you here is what I should tell you personally if I had the pluck (which I haven't). Now then, don't believe that anything is impossible. If you drop across something that really seems to be impossible don't admit it. Try and alter the word to something else. If you can't get over, go round. Not so many years ago you would have said, perhaps did say, that it was impossible for man to fly, and now look at it. It is very dangerous to say that anything is impossible, the time may come when you will wish you hadn't. Improbable isn't nearly so bad and leaves you a line of retreat if necessary, but when you say impossible you burn your bridges behind you. Yet in spite of all I have said, there are some things that are impossible, and they are the only case in which the word should be used, and for them I welcome it with both hands. I will tell you a few of them. It is impossible to get on if you have no faith in yourself and your work. It is impossible to get on if you are lacking in enthusiasm. It is impossible to be true to yourself if you are untrue to your employer. It is impossible to be a gentleman out if you are not one at home. I could go on like this till I fill this page, but I will finish with one more that, perhaps, sums up the lot. It is impossible to be what you pretend to be if you pretend to be what you are not. If you want to blame anybody for all this homily you must blame Clarissa. I asked her to give me a word to write about when I was "stuck," and she said it was impossible, and the above shows that even in this case it wasn't, so there you are.

A Word to the Wise.

Chevillard, my friend, I take my hat off to you. You and your machine are a wonderful combination. You do great things. I know you do. I have seen you. Indeed, I have seen you many times, and owing to your master hand I believe you are safe; but when you do it near the enclosure and I am one of the "enclosed," I get cold feet, and start looking for a dug-out to hide in.

No, my hair is quite all right, what little there is of it, and it does not unduly try to assume the position generally taken by your machine, of which I want to see a little less plan-view when in the air. I have seen it head on, tail on, wing on, almost upside-down on, but I do not remember ever seeing it in normal flight, and I should much like to do so. There are young pilots in aviation now who look to the more experienced for example, and I am afraid.



The latest type 50-h.p. Gnome Blackburn monoplane with which Mr. Cyril Foggin, together with Mr. Harold Blackburn, has been giving exhibitions in Leeds at Easter. This new Blackburn model has shown some excellent flying qualities, and is very stable in adverse winds. It is a quick climber, and has a fine turn of speed.

THE NEW DAILY MAIL PRIZES.

ONCE more the proprietors of the *Daily Mail* have come forward and offered two generous prizes with the object of stimulating progress in the development of aviation, with which we deal elsewhere editorially.

The first prize is the sum of £5,000 to the first person who shall pilot a waterplane of entirely British invention and construction round England, Scotland, and Wales—and, so far as Ireland is concerned, within one mile of Kingstown Harbour—in seventy-two continuous hours, starting and finishing at a point to be agreed upon near the mouth of the Thames. The full regulations which will be drawn up with the assistance of the Royal Aero Club have not yet been decided upon, but it will be specified that certain parts of the machine shall be marked and that the machine must not descend on land at any point, although it may, of course, stop in harbours for the replenishment of its fuel supplies, &c.

The second prize is £10,000 to the first person who crosses the Atlantic from any point in the United States, Canada, or Newfoundland to any point in Great Britain or Ireland in seventy-two continuous hours. The flight may be made, of course, either way across the Atlantic. This prize is open to pilots of any nationality, and machines of foreign or British construction.

The *Daily Mail* announces that the first entries for both prizes are those of Messrs. Blériot, Ltd., and Col. Cody, while Mr. Gordon England and Herr Rumpler have also entered for the Atlantic prize, and Mr. J. Radley and Mr. G. L. Temple for the Round Britain prize.

Previous Daily Mail Prizes.

In this connection the following summary of the prizes offered by the *Daily Mail* is not without interest:—

£10,000 or flight by aeroplane from London to Manchester in twenty-four hours with not more than two stoppages *en route*. Offered November 17th, 1906. Won by M. Paulhan on April 28th, 1910, with one stop *en route* at Lichfield. 183 miles covered in 242 minutes.

£1,000 for flight across the channel between England and France, to be accomplished in daylight without touching the sea. Offered on October 5th, 1908. Won by M. Blériot, July 25th, 1909, in 46 minutes of flight.

£1,000 for first circular flight of one mile in an aeroplane by a British subject in the British Isles on an all-British built machine. Won by Mr. J. T. C. Moore-Brabazon in a Short aeroplane on October 30th, 1909, in 2 mins. 36 secs.

£10,000 for circuit of Britain covering a distance of 1,000 miles in one day with eleven compulsory stops at fixed controls. Offered on May 22nd, 1910. Won by M. Beaumont on July 26th, 1911, in 22 hrs. 28 mins., at 45 miles an hour, defeating M. Védérines.

£1,000 for greatest aggregate cross-country flight in the year ending August 15th, 1910. Won by M. Paulhan with 855 miles, defeating Mr. Grahame-White with 842 miles.

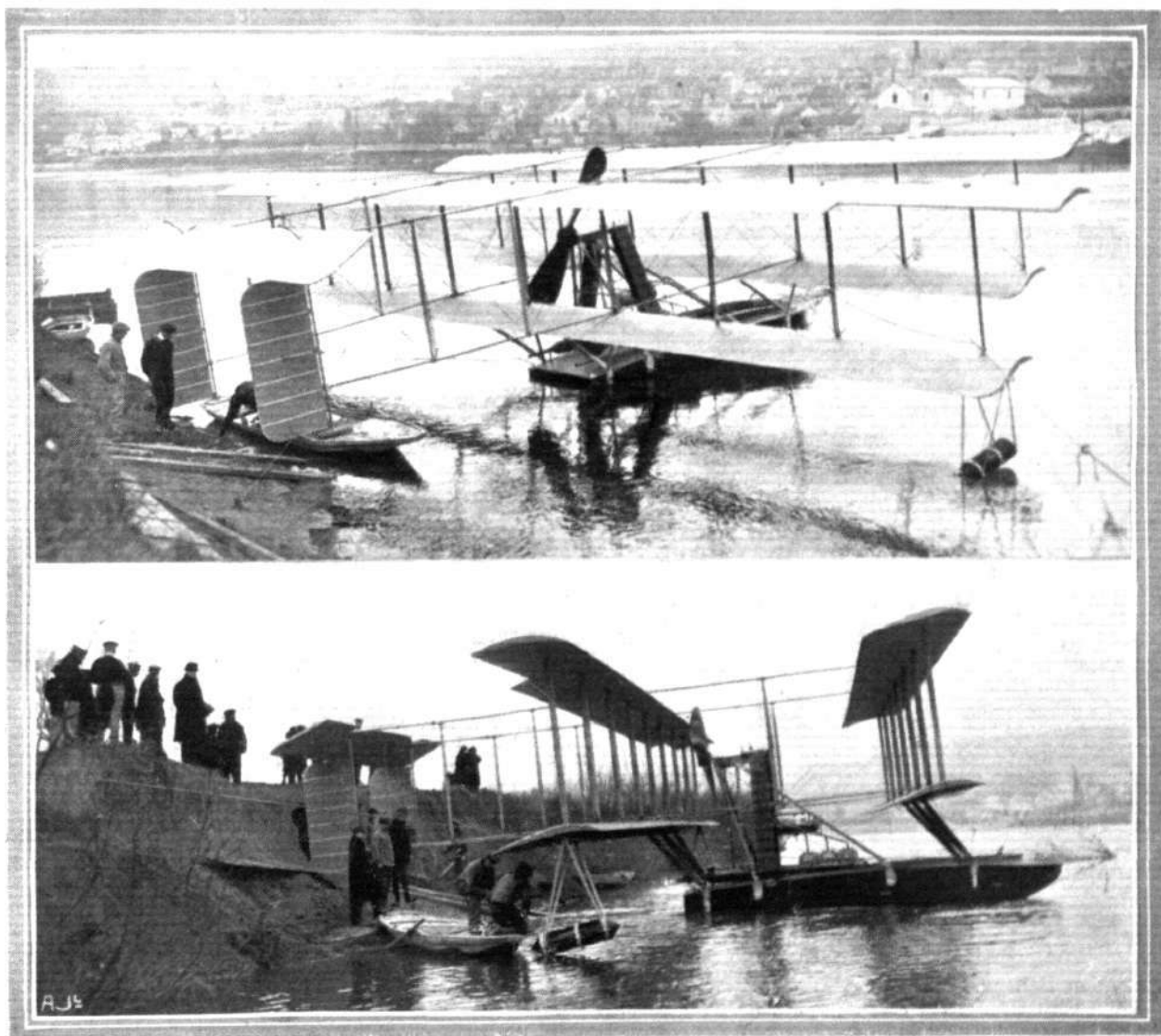
£150, £75, and £25 for aeroplane models awarded after exhibition at the Agricultural Hall, April, 1907.

£100 for half-mile flight (quarter-mile out and return), won by M. Henry Farman, January 14th, 1908.

£100 cup for second cross-Channel flight. Won by Count Jacques de Lesseps, May 21st, 1910.

£50 cup to John B. Moisant for flight from Paris to London, and smaller cup to his mechanic and passenger, Fileux. Won September 6th, 1910.

£250 and gold cup for flight of 81 miles round London. Won by Mr. T. O. M. Sopwith on June 8th, 1912, in 90 minutes.



HYDRO-AEROPLANES FOR MONACO.—The enormous double biplane built by Jeansson and Colltex. The span is 24 metres, length 16 metres. It is mounted upon a 7-metre Despujols hull, and in flying order weighs 4,300 kilograms. Two 6-cyl. 230-h.p. Chenu motors are fitted, giving a speed of over 100 k.p.h.

ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE Summary of work during week ending March 20th, 1913:—

No. 1 (Airship) Squadron. Farnborough.—On Tuesday, 18th, the "Gamma" and "Beta" were both out making extended flights. The other days of the week were devoted to kiting work. A party of sailors has arrived for a course of kiting.

No. 2 Squadron. Montrose.—Flying took place on B.E.'s and M. Farmans on the 13th, 14th, 17th and 18th. Experiments with dropping message bags were carried out. The officers are getting to know the country round Montrose pretty well now, as nearly all of them have made extended flights in the neighbourhood.

No. 3 Squadron. Larkhill.—The wind was very strong throughout the week except on Tuesday the 18th, when Capt. Fox flew a new B.E. over from Farnborough. The squadron proceeded on Easter leave on the evening of Thursday, 20th.

No. 4 Squadron. Farnborough.—All nine officers of the Squadron were flying on Tuesday, 18th, several flights over the surrounding country being made. The machines used were B.E.'s, M. Farmans, Breguets, and Cody. Wind and rain prevented flying on the other days of the week, and the Squadron proceeded on Easter leave on Thursday evening.

Week ending March 28th, 1913:—

No. 1 (Airship) Squadron. Farnborough.—The Squadron returned from Easter leave on Tuesday, 25th. On Wednesday and Thursday the "Beta" made numerous reconnaissances over the districts in which the 1st and 2nd Divisions were billeted. The total mileage of these reconnaissances exceeded 200 miles. On Thursday night, nine short flights were made for instructional purposes. Throughout the week the Naval contingent received instruction in kiting.

No. 2 Squadron. Montrose.—On Monday, Tuesday, and Wednesday, numerous reconnaissance flights were made by the officer pilots, on B.E. and M. Farman machines. The total mileage exceeded 600 miles. The pilots are given definite instructions for each flight. On Monday, three officers were caught in a blizzard but returned to the sheds safely.

No. 3 Squadron. Larkhill.—On Tuesday, Wednesday, Thursday and Friday the officer pilots were at work, making numerous flights on B.E., Maurice and Henry Farman machines. On Thursday, Major Higgins and Lieut. Cholmondeley flew a B.E. and a Maurice Farman, respectively, over from Farnborough—these two machines were taken over from the R.A.F. The latter officer spent the night at Whitchurch, flying on to Larkhill early on Friday morning in a strong wind.

No. 4 Squadron. Farnborough.—No. 4 Squadron were kept hard at work on Wednesday and Thursday carrying out reconnaissances over the district occupied by the 1st and 2nd Divisions in billets. Much valuable experience was gained, and several officers from the Staff College acted as observers. 46 reconnaissances in all took place, roughly 25 miles being covered in each case. The machines used were B.E. and Maurice Farmans.



AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Annual General Meeting.—At the annual general meeting, held on Wednesday, March 26th, the following were elected to fill the vacancies on the Council:—A. E. Berriman, Griffith Brewer, J. W. Dunne, Mervyn O'Gorman, Alec Ogilvie, F. Handley Page, W. O. Manning, Col. H. E. Rawson, C.B., R.E.

Election.—Brigadier-General C. Penrose, C.B., has been elected an Associate Member of the Society.

Meetings.—The tenth meeting of the present session will be held at the Royal United Service Institution, Whitehall, on Wednesday April 9th, at 8.30 p.m., when Mr. Archibald R. Low, M.A., A.F.Ae.S. will read a paper, to be followed by a discussion, on "Propellers." Sir John Thornycroft, F.R.S., will preside.

The eleventh meeting of the present session will be held on Wednesday, April 23rd, when there will be a discussion on "Stability."

BERTRAM G. COOPER, Secretary.



Exit the London Balloon Company.

AFTER a somewhat chequered career the end of the London Balloon Company was announced in the *London Gazette* of the 1st inst. in the following terms:—His Majesty the King has been graciously pleased to approve of the disbandment of the London Balloon Company, Royal Engineers, Territorial Force.

QUESTIONS IN PARLIAMENT.

ON the 26th ult. in the House of Commons, Mr. Joynson-Hicks asked the Secretary for War whether the decision not to adopt large airships of the Zeppelin or other similar type was made by the Committee of Imperial Defence, the Cabinet, or the War Office; and whether, in either case, there were reports from his military advisers.

Col. Seely: The answer to this question, so far as it refers to War Office action, is in the affirmative.

Mr. Joynson-Hicks further asked how many of the 123 officers appointed to the Royal Flying Corps had ever flown a test equal in severity to that necessary to secure the French military *brevet* which called for a flight over a triangular course of at least 150 kiloms. in extent, and which was held by over 200 French military pilots.

Col. Seely: Forty-seven officers have passed the course laid down by the Central Flying School, which is a very exacting test. About thirty more officers will have passed the same test in the course of next month.

Mr. A. Sykes asked whether, in view of the number of aeroplanes now available for military purposes, the Secretary for War would arrange to send some of them round the Territorial camps this summer so as to give a practical demonstration of the capabilities of this new branch of the Army.

Col. Seely: This suggestion shall receive full consideration.

On Wednesday, Mr. Joynson-Hicks asked the Secretary for War whether his attention had been called to the statement by General Henderson, Director of Military Training, at the meeting of the Aeronautical Society on March 26th, that the reason why orders for aeroplanes last year were spasmodic was that the money came spasmodically, and that when orders were not given it was due to lack of money, and whether such statements enunciated the views of the War Office.

Col. Seely answered that General Henderson's statement was quite accurate, but was not in conflict with his (the War Secretary's) own declaration as to the way in which his demands for money for aeroplanes had been met by the Chancellor of the Exchequer. The spasmodic expenditure on aeroplanes was due to the decisions which had to be given from time to time as to the application of the money available for all purposes in which the War Office was concerned.

Military Aviation in India.

ON Monday a question was asked in the House of Commons by Sir J. Rees, regarding military aviation in India, and Mr. Montagu, under-Secretary for India, stated that aviation classes had not been yet formed in India, but the matter was under consideration by the Government of India.



AIRSHIP NEWS.

The Prince of Wales in Germany.

DURING the visit of the Prince of Wales to Stuttgart last Saturday, it was anticipated that the Zeppelin Z4 would visit the city during her duration trial, but the Royal visitor had to be disappointed. The Prince went on to Friedrichshafen on Sunday and on the following day, under the guidance of Count Zeppelin, made an inspection of the works. It had been hoped that the Prince would have been able to enjoy a trip in the Z4, but this idea had to be abandoned on account of the squally weather.

Long Voyage by Zeppelin Airship.

THE new Zeppelin dirigible Z4 made an eighteen-hour trial voyage on Friday night and Saturday morning. Leaving Friedrichshafen at 5.37 p.m. on the 28th ult., the airship cruised over Wurtemberg, the Black Forest, and Baden to Mannheim, and then returning to her starting point, having covered about 310 miles in 18 hrs. 53 mins.

An Anxious Time with the L1.

A REPETITION of the catastrophe at Karlsruhe, very nearly occurred at Johannisthal, on the 26th ult. The naval Zeppelin L1 had made a trip of 3½ hours over Berlin, etc., and had returned to her base, when it was found that the wind was much too strong to permit of any attempt to dock the airship. For some three hours she was held down by two companies of Grenadiers, before it was possible to get the dirigible into her shed.

Five Hours' Voyage by Russian Astra.

ON the 24th ult. the new Astra dirigible built for Russia left Issy at mid-day, and with ten passengers on board made a cruise of five hours' duration. The airship also made an hour's cruise on Sunday morning with a dozen passengers on board.



Argyll Engines for Aeroplanes.

WE learn that something may be heard shortly in aeroplane circles regarding the Argyll sleeve valve engine, one feature of which is the amount of weight which can be cut down when necessary.

FOREIGN AVIATION NEWS.

500 Kiloms. in 3 hours 10 minutes.

TWO remarkable flights were made in France on the 28th ult. The first was by Eugene Gilbert who has been recently making some fine performances at the Bron aerodrome, near Lyon, on his Morane monoplane with 50-h.p. Rhone motor and Integrale propeller. Starting from Bron at 9.30 he steered a course for Paris and at twenty minutes to one he landed safely at Villacoublay. His time for the 500 kiloms. between Lyon and Paris was 3 hrs. 10 mins.

A Fast Deperdussin for Argentina.

ON the 28th ult., at Betheny, Janoir tested an 80-h.p. Gnome-Deperdussin monocoque ordered by the Argentine Government. The machine climbed 1,000 metres in 3 mins., and was timed to attain a speed of about 150 k.p.h.

Reinforcements for French Army.

BEFORE Capt. Destouches, at Buc, last Saturday, Perreyon made official tests with eight 50-h.p. Blériot monoplanes built for



THE NEW ARMoured BLÉRIOT.—View from in front, showing the elevator and the general arrangement of the body, with the window for the observer.

420 Kiloms. in 2 hours 40 minutes.

THE second remarkable performance on the 28th ult., was made by the Belgian Crombez, who, starting from Rheims on his Deperdussin monoplane, flew to Tournai, a distance of 200 kiloms. in 1 hr. 5 mins. After a rest of an hour and twenty-five minutes, he resumed his journey and arrived at Liege after an hour and 35 mins. flying. The flying time for the distance of 420 kiloms. being 2 hrs. 40 mins. The Deperdussin was fitted with an 80-h.p. Gnome motor and Integrale propeller.

The Schneider Cup.

FOR the French team for the forthcoming international contest for the Schneider Cup at Monaco, entries have been received from Breguet (2), Nieuport (2), Deperdussin (2), Borel (1), Morane (1).

the French Army. Several of the machines are intended for the aviation centres in Morocco.

Two Hours' Flight by Daucourt.

AFTER superintending two splendid flights by Capt. Risk and Lieut. Courtney by way of finishing up their training at the Borel School on Saturday, and after giving instruction to the numerous pupils, Daucourt, the *chef pilote* at the Borel School at Villacoublay, made a solo flight of two hours' duration, only coming down when it was too dark to continue flying.

An Aerial Taxi.

AFTER testing one of his military biplanes, Maurice Farman on Saturday flew it over from Buc to Villacoublay, and then returned



View of the new armoured Blériot from the back, showing the rudder, the long ailerons, and the fish tail fins on the main plane.

Fine Cross-Country on Deperdussin.

LIEUT. RADISSON made a fine cross-country flight on his 80-h.p. Gnome-Deperdussin, on the 28th ult., going, with a passenger, from Maubeuge to La Fere and Douai, and back to Maubeuge, a round trip of 250 kiloms.

More Farmans for R.F.C.

BEFORE being packed up for transmission to Farnborough, two Henry Farman biplanes for the British Government were given their final tests at Buc, by Bernard, on the 28th ult.

on a H. Farman, with Bernard at the tiller, which had been sent over from Buc.

A Man of Parts.

ON Sunday Doctor Reymond, who is a Senator and President of the National Aviation Committee, flew over on his Blériot from Buc to Corbeaulieu to see how some of the National Committee's pupils at the Dautre school were progressing. He incidentally performed a surgical operation before returning on his monoplane to Buc.

Good Work with Rhone Motors.

SOME splendid flying was seen at Amberieu on the 27th ult., when Vidart, on a Deperdussin, Letort, on a Sommer, Gilbert, on a Morane, and Mouthier, on a Borel, all went to Lyon and back. Each of the four monoplanes was fitted with a Rhone rotary motor. On Sunday, Mouthier flew to Bourg and back.

Hydro-aeroplane Events for Lake Constance.

THE Aero Clubs of South Germany are combining to organise a meeting for hydro-aeroplanes, to be held on Lake Constance from June 29th to July 5th.

Another Caudron Superior Pilot.

SAPPER STROHL on a Caudron made the triangular cross-country test for a superior brevet on the 27th ult., over a course from Crotoy to Calais and Le Treport and back to Crotoy. His time for the trip, including the several specified stops, was 4 hrs. 20 mins.

Nieuports for Spanish Army.

COL. VIVES Y. VICH was at Villacoublay on the 26th ult., to officially take delivery of three 80-h.p. Nieuports for the Spanish army. With Gobe as pilot, the machines easily carried out the specified tests, climbing 500 metres in times varying between 3 mins. 50 secs. and 4 mins. 25 secs., and landing on ploughed land with the furrows 30 c.m. deep. One of the machines was dismantled in 11 mins. 35 secs., and was re-erected, ready for flight, in 20 mins.

Reconnoitring on Farmans.

IN response to orders, Guitou and Sergeant Berlioux on the 29th ult., flew along the frontier from Toul and landed at Pont-a-Mousson, returning in the evening to Toul. Corporal Foulquier returned from Nancy to his station at Toul, and Lieut. Prat made a long reconnaissance over the forts round Toul. All the pilots used Henry Farman machines.

Danish Army Buys two Farmans.

FOLLOWING the visit of Lieuts. Ramm and Mosing to France, the Danish military authorities have purchased a Henry Farman machine and a Maurice Farman. The Danish Army thus has four French machines at its disposal.

Double Fatality in Japan.

WHILE a Parseval airship and four aeroplanes were returning to their headquarters at Tokyo, on the 27th ult., after carrying out some manoeuvres before members of the Japanese Parliament, one of the machines, a monoplane, fell from a height of 1,000 ft., and both occupants, Lieuts. Tokuda and Kimura, were killed.

Fatal Accident in France.

WHILE Lieut. Bresson was flying at Verdun on the 28th ult., preparatory to making a trip over Nancy, his machine was caught in a violent remous, and dropped to the ground from a height of 300 metres. The pilot was killed instantly.

A Morane Hydro-biplane.

THE hydro-biplane built by the Morane-Saulnier firm to take part in the hydro-aeroplane competitions at Monaco, was tested over the Seine near the Jatte Island, on the 25th ult. Gilbert was the pilot, and he was accompanied by a passenger in several short flights. The machine has a span of 17 metres, is 10 metres long, 4 metres high, and is fitted with an 80-h.p. Rhone motor.

Maurice Farman's Sunday Trip.

LAST Sunday, Mr. Maurice Farman's companion during his usual weekly excursion was M. Doncker. They went from Buc to Tillieres for lunch and then on to Etampes, returning to Buc in the evening through a heavy rainstorm. Bernard also flew over to Etampes and was testing the new M. Farman with De Dion motor built for the Marquis de Lareinty-Tholozan.

Flying along French Coast.

ON Monday, Fugairon continued his tour along the French Coast on his Breguet, going from Cherbourg to Brest, and during practically the whole of the 170 kiloms. trip he was over the sea.

Fast Flying Through the Rain.

THROUGH a heavy rain, Guillaux, on his Gnome-Clement-Bayard monoplane, on Sunday flew from Issy to the Vidamee aerodrome in half an hour. In the afternoon he treated the large crowd which assembled to some very fine work with his machine.

Guillaux Flies Back to Paris.

ON the 25th ult., Guillaux returned on his Clement-Bayard monoplane to Paris from Port-l'Eveque, covering the distance in 2 hrs. 10 mins. His speed during the last part of the journey was about 100 k.p.h.

Six Hours' Trip in Germany.

A SPLENDID cross-country trip was made on Monday by Lieuts. Canter and Boehmer, attached to the Doeberitz military aviation centre, on their Taube monoplane. The two officers went from Jueterbog to Malente, near Lubeck, a distance of 599 kiloms. in 6 hours and 9 mins.

Cross-Country Work in Russia.

ON the 27th ult. Capt. Andreadi, accompanied by Prince Monrouzi on a Nieuport monoplane flew from Sebastopol to Simferopol and back. Capt. Makeef also made a flight over the same course.

A Russian Fatality.

A FATAL accident occurred at Warsaw on the 29th ult., a machine falling from a height of 300 metres, and the pilot, Lieut. Pietrovsky, receiving injuries to which he succumbed.

A Chilean Record.

ON the 25th ult. Senor Figueroa, on his Blériot-Gnome monoplane flew from Batuco to Valparaiso and Santiago, a distance of 180 miles in two hours and a half, which is claimed as a speed record for South America.

The Flood Disaster in America.

ONE of the heaviest sufferers in the terrible floods which devastated a large area in Ohio and Indiana last week, was the town of Dayton, O., which will ever be known to fame as the home of the Wright Brothers. Details as to the exact damage done are unobtainable at the time of writing, but it is interesting to note that aeroplanes have been used for conveying food to marooned inhabitants.



Garuda Propellers in Great Britain.

WE learn on good authority that the Garuda Propeller works are shortly to open works in this country for the manufacture of the Garuda Propeller, which, it may be mentioned, holds all the German records, and many world's records, including those for carrying 2, 3, 4, 5, 6 and 7 passengers.

Another Naval Aviation Base.

By the announcement on Monday of the appointment of Lieut. S. D. A. Grey to the Command of the Calshot Naval Air Station, the latter comes into official existence. Sub-Lieut. J. L. Travers has been appointed flying officer at Calshot.

New President of K. and M.A.A.

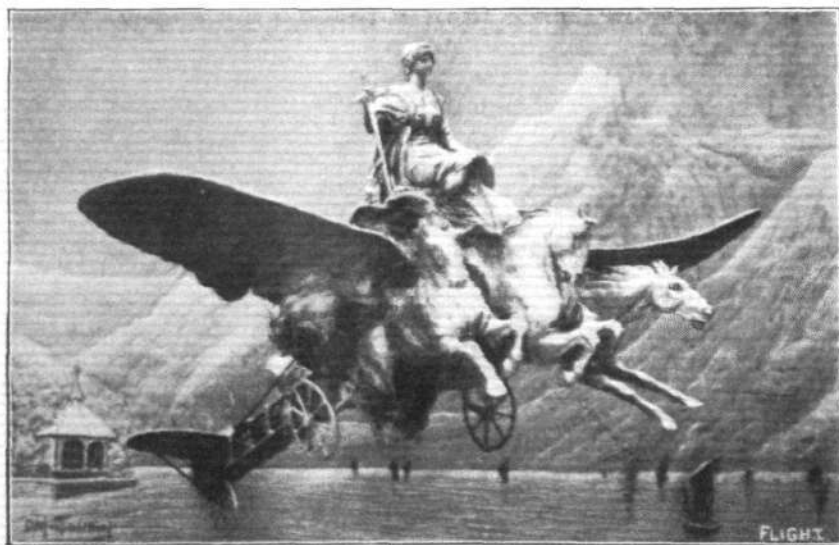
SIR JOHN C. SHELLEY, BART., brother-in-law of the late Hon. C. S. Rolls, has become president of the Kite and Model Aeroplane Association in succession to the late Col. Trollope.

The Futurists.

IT will not be long probably before we shall all be taking aeroplane trips as calmly as we now take a motor-bus journey—that wonder of a few years ago. Two workmen overheard on Good Friday at Hendon were, however, possibly anticipating events.

They were intently studying the huge posters which are to be found outside the aerodrome, announcing passenger flights of one circuit for two guineas, two circuits for three guineas, Brooklands twenty-five guineas, &c. :—

"Say, mister," said one of them to the man at the gate, "what's the workmen's fare?"—*Evening News.*



The official postcard which has been issued in connection with the Swiss National subscription for military aviation.

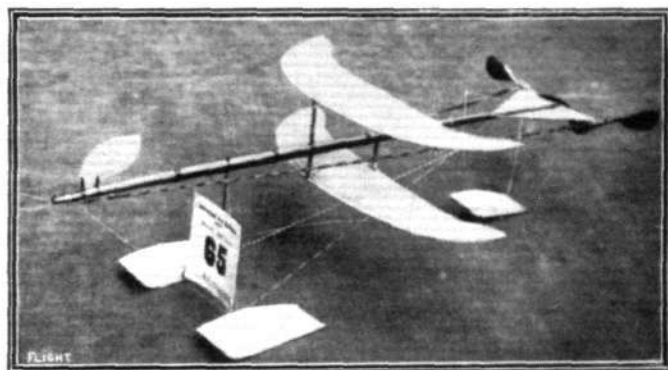


Edited by V. E. JOHNSON, M.A.

Mr. H. H. Groves' Olympia Models.

THESE two steam-driven models have already been illustrated in these pages (see March 8th and 15th issues). The following particulars will, we are sure, be of especial interest to many of our readers:—

Biplane.—Span 5 ft., *i.e.*, the span of the top plane, the span of the lower being 4 ft.; length 4 ft. The top plane only has upturned tips for lateral stability. The wings, &c., are double-surfaced and doped with cello. The average chord of the main planes is 8.5 ins. Total span of elevator 19 ins., maximum chord 3.75 ins., tapering to 3.25 ins. at a distance of 8 ins. on either side of the central maximum chord. Total area of supporting surfaces, 6.85 sq. ft. The main planes are staggered to the extent of 4 of the maximum chord, *i.e.*, staggered to the extent of 3.8 ins. The gap between the planes is 1 ft. Angle at which the main planes are set, 5° (positive); angle at which the elevator is set, 10°

**Mr. A. F. Houlberg's hydro-aeroplane, Olympia model.**

(positive). Diameter of 4-bladed propeller 17.5 ins., pitch 1.2 times diameter; this has, however, since been replaced by a 2-bladed propeller of the same diameter, the pitch at the tips of which is 1.2 times the diameter. Actual normal static thrust 22 to 24 ozs at 2,000 r.p.m.; this can, of course, be accelerated, if desired. Weight, unloaded, 4 lbs. 10 ozs.; fully loaded, 5 lbs. 3 ozs., *i.e.*, for (at least) a 3 mins. run.

Monoplane.—Has same overall measurements, and a weight empty of 3 lbs. 9 ozs., and of 4 lbs. 2 ozs. fully loaded; average chord of main plane, 9 ins.; elevator span, 2 ft. 4 ins.; maximum chord, 3.25 ins., tapering to 2.5 ins. at a distance of 12 ins. on either side of the maximum central chord; total area of supporting surfaces, 4 sq. ft. The angles at which the main plane and elevator are set are the same as in the case of the biplane; diameter of two-bladed propeller, 16 ins.; r.p.m., 2,100 approx., counting the pump strokes and multiplying by the gearing in both this case and the case of the biplane; normal static thrust, 20 ozs.

The materials used for construction in both cases are the same, *viz.*, ash, birch, and bamboo; all the joints are bound with silk.

Mr. Groves estimates their respective velocities in flight to be: Biplane, 20 m.p.h.; monoplane, 25 m.p.h.

It will be noticed that the loading in the case of the monoplane is (taking total weight as 4 lbs.) one pound (16 ozs.) per sq. ft., and in the case of the biplane (taking total weight as 5 lbs.) 11.7 lbs.

per sq. ft. Now making use of the formula $W = \frac{V^2 C}{g}$ where W = weight lifted in lb. per sq. ft. V = velocity in ft. per sec. C = a constant = 0.025 or $\frac{1}{40}$. $g = 32.2$ or 32 approx., we see that a lift of 1 lb. per sq. ft. gives us approximately a velocity of 25 m.p.h. for the monoplane, and 11.7 oz. per sq. ft. a velocity (remembering that the formula gives the result in ft. per sec., and therefore multiplying our result by $\frac{3}{8}$ to convert in miles per hour) of 20 miles per hour, both of which agree with Mr. Groves' estimate.

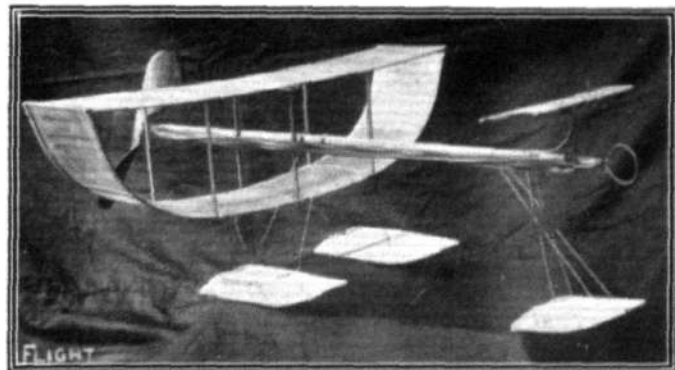
Neither of these machines can, therefore, be termed slow flying models. A loading of 8 ozs. per sq. ft. gives a velocity of about 17 m.p.h., and in the case of rubber driven models a loading of about 8 ozs. per sq. ft. is quite common, and we shall certainly not be far wrong if we take the flight velocity of the average model as about 17 m.p.h. I have nearly always found that aeromodelists are inclined to underrate the actual flying velocities of their models.

The New Bragg-Smith Hydro-Aeroplane.

We give this week an illustration and some particulars of a model hydro-aeroplane just built by Mr. G. P. Bragg-Smith for Master A. Asquith (the Premier's son). The chief point of interest about it is that it is a machine driven by only one propeller, and is certainly one of the first of that type to meet with any success. Novices may not know it, but it is a well-known fact amongst experts that it is more difficult to make a really successful machine driven by only one propeller than when two are employed. The chief difficulties are the torque of the single-rubber motor and the diminished power in proportion to the total weight employed. The machine is of the well-known Bragg-Smith type; it will be noticed, however, the slope up of the lower forepart of the float has been made more gradual. To overcome the torque of the single motor, which (since in this case the propeller revolves anticlockwise, as seen from the rear when driving the machine forward) tends to turn or twist the machine over clockwise, and, therefore, increase the immersion of the right-hand float (always, of course, as seen from the rear), the rear edge of this float is so shaped as to have a slightly increased dip or angle of incidence. Were some such device not employed, the model would tend to circle quickly to the right, and thus not only make it very difficult to launch, but, in general, undoubtedly prevent it from rising from the surface of the water altogether.

The following are the chief dimensions, &c.: Total length, 28.5 ins.; span, 21.5 ins.; weight (nearly), 6 ozs.; rubber motor 12 skeins $\frac{1}{8}$; weight, 25 grammes (28 grammes roughly make, 1 oz.); propeller diameter, 9 ins.; size of main top plane, 21.5 ins. by 4.75 ins.; size of elevator, 7 ins. by 2 ins., with a $\frac{1}{8}$ in. gap down the centre; position of the centre of gravity (approx.) 1 in. in front of the main plane, the elevator being on a level with the top plane; angle of elevator approx. 5° positive; main planes 3° negative. Materials: Whitewood and Jap silk, Bragg-Smith proofed, and in the case of the floats varnished and painted.

The length of the motor rod is 26.25 ins., the centre of gravity being 11 ins. from the propeller end; the distance between the leading edge of the main planes and the rear edge of the elevator is 12.5 ins., and the tip of the front float slightly in advance of the motor rod, the vertical plane containing the centre of gravity cutting the rear floats about half-way between fore and aft edges. Length of rubber motor rod, 24.5 ins. Dimensions of floats: Front float, 5 ins. long, 1.5 ins. broad, and having a maximum depth of 1.125 ins.; two rear floats, 8 ins. long by 3.375 ins. broad, and having a maximum depth of 1.25 ins.; breadth of floatational base 9 ins. The appearance of the machine, as can be seen from

**The latest Bragg-Smith hydro-aeroplane model, as supplied to the Premier's son, Master A. Asquith.**

the photograph, is an extremely neat and compact one, and the finish and workmanship is excellent. A most appropriate and up-to-date present for any boy.

Some further points re Mr. McBirnie's models.

Referring to our comments on the above in March 22nd issue, Mr. McBirnie writes us as follows: "I appreciate your comments on my remarks, and would like this opportunity of explaining in greater detail one or two of the points raised. Firstly, I used the word

'sagging' for want of a better term, which would signify that *proportionate* loss of power which is apparent in a skein of rubber running to 4 ft. or more. I think that every aeromodelist is agreed that once the 3 ft. length is passed an appreciable loss of power is apparent, otherwise I might ask: 'Where are our 5 ft. or 6 ft. models?' Some time ago I made a 5 ft. 6 ins. model, and after exhaustive trials its best efforts were some 200 yards. To obtain even this, 40 strands of $\frac{1}{16}$ rubber had to be employed. At your suggestion of looping up the rubber, I used this device some two years ago, but discarded it, as I found that the kinks invariably caught (temporarily, of course) and caused vibration. I afterwards tried a wide loop of tin rounded off at the ends, but the friction was unsatisfactory, and I obtained the best results with the unhampered skein. I quite agree that a competition for stability and slowness of flight is one that should be worth the consideration of the K. and M.A.A., but I think that there would be some difficulty in getting a model to fly at 10 m.p.h. in a 20 m.p.h. wind.

"Personally, I have a weakness for the large and slow-flying model, and the 4 ft., 5½ oz. model to which I referred took (in the Gamage Cup Competition) 80 secs. to fly, in a straight line, 500 odd yards, i.e., about 11½ m.p.h. Of course, there is the spherical line of flight to be allowed for. This model's best duration to date is 94 secs., and my conclusions are that the large model must be built exceedingly light if it is to be (in the opinion of the modellist, at any rate) a success."

It is some time now since the writer tried any experiments with the type of model referred to by Mr. McBirnie, but he certainly failed to notice that proportionate loss of power referred to—in models up to at any rate 4 ft. 6 ins. in length; he also always made use of the wire loop when using long skeins of rubber, preferring the (very) occasional "catching of the kinks" to the continual vibration caused by the long, untwisting skein of unsupported rubber. This discussion once again raises the question of sizes and weights of models, and durations and distances. Theoretically, I know of no reason why a model 6 ft. in length should not fly so far as one 3 ft., provided the proper design, &c., be employed. Undoubtedly, the problem is far more difficult mechanically. Experiments are, undoubtedly, much needed, especially with heavier rubber-driven models than those in general use. Has anyone as yet tried any experiments with a machine fitted with *four* propellers? We remember once seeing in a competition, some two or three years ago, a machine with two propellers and two tractors. Unfortunately, this model promptly smashed itself to pieces at the first attempt, since when we have seen no other. Given certain conditions, however, the experiment certainly seems worth a trial.

The Bonn-Mayer Petrol Motor.

The following are the principal weights of this interesting motor, which we had the pleasure of seeing running a few days ago. The weights given are for the plant complete, as running with fuel and oil for about a five minutes' run, fitted with a 3-ft. propeller and

mounting. Propeller and mounting, 1 lb. 4 ozs.; engine, carburettor and distributor, 6 lbs. 1½ ozs.; petrol for 5 mins., 1 oz.; coil, 10½ ozs.; battery, 1 lb. 2 ozs.; total, 9 lbs. 3 ozs.



The Bonn-Mayer petrol motor for models.

As there is no difficulty in getting a 14 lbs. propeller thrust with this plant, it would undoubtedly fly a suitable properly designed and constructed model. As a matter of fact, a machine fitted with an exactly similar motor, constructed by Mr. Mayer, has already made many successful flights. The manner in which it can "shift" a 3-ft. propeller is certainly astonishing at first sight. The model would, of course, be a large one, and could weigh complete, without any detriment, well over 40 lbs. A power-driven model will rise off good ground if the thrust of the propeller be one-fourth the total weight; that gives a maximum permissible weight of 56 lbs. There should, however, be no difficulty in making the model complete to weigh 30 lbs. or even less, which leaves an ample margin for the case of the hydro-aeroplane model.

Mr. Oliver's Query—Replies to.

W. E. Knight, writing in reference to the above, says: "In reply to Mr. Oliver's query (of March 20th issue) for a good home-made rubber lubricant, I give the following:—Take 1½ oz. of soft soap, 2 ozs. of glycerine, 8 ozs. of water; boil together in a saucepan until they have the consistency of golden syrup, then pour out into a vessel and allow to stand till cool."

S. J. Upward writes: "Take water 10 ozs., ordinary white soap $\frac{1}{2}$ oz., pure glycerine $\frac{1}{2}$ oz., 1 small spoonful of salicylic acid, and $\frac{1}{2}$ oz. of graphite. When the soap is dissolved add the glycerine and acid, and the graphite when the mixture is set."

W. J. Ledward says: "To 1 pint of boiling water add half a bar of washing soap, and when cool add 1 oz. of washing soda. This makes a very good lubricant which does not seem in the least deleterious to the rubber."

Replies in Brief.

J. E. REID.—An r.o.g. rubber-driven model should rise off good ground if the total static thrust be one quarter the total weight, your 5½ oz. thrust should therefore rise your model, which you say weighs 22 ozs. inclusive of everything.

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Bart., the secretary stated that the selection committee out of the gentlemen nominated recommended his election, and it was hoped he would be able to help the association in raising the War Kite Squadron and also the International Prize Fund. If the money needed for the international meeting in this country cannot be raised the French have offered to find it if we hold the meeting over there. It therefore is hoped that some gentlemen in this country will come forward quickly and supply the money. After the general business, the suggestions for various competitions were read by the chairman, who stated that every suggestion should be considered by the rules committees. A vote of thanks to the chairman brought the meeting to a close, after which a general discussion followed among the members.

International Aero Motor Competition.—Class 5 for aero motors. The bench tests for this class will be carried out at the East London College, Mile End Road, by Professor J. T. Morris, on Saturday, April 12th, at 2.30 p.m. Judges and competitors should travel by District Railway to Stepney Green Station, and, turning to the left on leaving the station, the College will be found adjoining the People's Palace on the left. The hon. sec. of this association will meet the party outside the east gate, which is the first one after passing the clock tower of the People's Palace, at 2.25 sharp. On no account enter through the People's Palace gate. All details and rules have been posted with drawings to all competitors. An official chart will afterwards be issued, giving the result of the tests, and being the first tests made officially of model engines by this association should be interesting to all. These tests have been arranged by the hon. sec. on behalf of the Royal Aero Club, on whose behalf they are issued.

Subscriptions.—Subscriptions are now due, and should be forwarded without delay, as their early payment greatly facilitates the work of the association. 27, Victory Road, Wimbledon, S.W. W. H. AKEHURST, Hon. Sec.

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MODEL CLUB DIARY AND REPORTS.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

Monthly Report.—During the last month some splendid sport has been obtained with the Haddon glider, nearly all the members of the club partaking in flights in the glider. The first real day's sport was on March 1st, when there was a steady wind blowing across the club aerodrome at about 20 m.p.h. The secretary was the first to go up, and the towers had only to start at a walking

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Hand-launched	Distance	A. E. Woollard	477 yards.
	Duration	A. F. Houlberg	89 secs.
Off ground	Distance	G. Rowlands	232 yards.
	Duration	A. F. Houlberg	51 secs.
Hydro, off water	Distance	G. P. Bragg-Smith	25 secs.
	Duration	F. G. Hindsley	173 yards.
Single-tractor screw, hand-launched	Distance	J. E. Louch	44 secs.
	Duration	J. E. Louch	40 secs.

Annual General Meeting.—The annual general meeting was held at Caxton Hall, Westminster, on Thursday, March 27th. Mr. H. W. Browne was elected to the chair for the evening. The officers elected to serve for the ensuing twelve months were: President, Sir John C. Shelley, Bart. Vice-Presidents, Col. J. D. Fullerton (late R.E.), F.R.G.S.; J. Moore-Brabazon; W. H. Dines, Esq. (late Pres. Royal Met. Soc.); R. M. Balston, F.R.S. Advisory Council, W. B. Brooke; H. W. Browne; T. W. K. Clarke, A.F.A.S.; S. F. Cody; C. Davies; C. R. Fairey; T. O'B. Hubbard; H. H. Groves; V. E. Johnson, M.A.; J. H. Ledeboer, M.A., A.F.A.S.; F. Mayer; R. H. Lancaster; F. T. Pringuer; G. Rowlands; G. P. Bragg-Smith; Dr. A. P. Thurston. Hon. Secretary, W. H. Akehurst. Assistant Hon. Sec., A. F. Houlberg. The report for the year was passed as read on the proposition of Mr. H. Browne, seconded by Mr. F. T. Pringuer. The chairman in his remarks referred to the sad loss the association had sustained in the death of Lieut.-Col. F. C. Trollope, who had done much, and on the eve of his illness made arrangements to hand a cheque to the secretary for the 1st Section of War Kite Squadron. The chairman also stated that it was necessary that the association should have a new form of membership for those who wished to help forward the scientific building of kites and models by joining the association and strengthening its hands. After a discussion it was unanimously decided that there should be Fellows and Associate Fellows, and that all persons should be eligible subject to the approval of the council. The following to be the annual subscriptions: Fellows, £3 3s.; Associate Fellows, £1 1s.; members, 5s.; family subscription (3 or less), 10s.; junior members, under 17, 2s. 6d.

Gifts of Trophies.—The hon. secretary announced that the latest trophies given to the association were: The Michelin Challenge Trophy, The London Aerodrome Challenge Trophy. In proposing the election of Sir John C. Shelley,

pace and the glider rose straight away to about 10 ft., keeping very steady. The sensation was fine and very exhilarating, and altogether secure. After several successful flights one of the members went up to about 20 ft., and when descending the machine dived when about 15 ft. high, breaking the chassis and throwing the pilot on to the grass in front of the glider, but no other damage. After this a hanging position was taken in the glider, the chassis being dispensed with for the time, the pilot holding the glider up on landing. It was found that the machine was not nearly so steady when the hanging position was taken as when sitting in the glider, several of the members, especially Mr. Oliver, having some very sudden and peculiar descents, but without any damage, the glider always righting itself or picking up again before reaching the ground. Some more sport was again obtained the next day, but as the wind had abated somewhat the glider would only make prolonged glides with the lighter members. The next week-end the glider showed the peculiarity of slipping sideways about 30 ft., but without dropping any distance, and also keeping on a fairly level keel. On the Sunday evening a gale was almost blowing, and as the glider was out the members decided to risk a few flights; and during the tea interval darkness came on. However, Mr. G. Baker went up, and had a most exciting time, the towers being pulled backwards several times, and the glider rising and falling incessantly on the gusts; he, however, landed safely. Mr. G. Haddon Wood then went up, and after a most exciting time—the ground being invisible when in the air—the glider suddenly seemed to drop from underneath the pilot and hit the earth with a bump which broke one of the uprights, and before assistance could be obtained the glider rose again and further damage was done. Subsequently, whilst it was being taken back, a gust caught the glider and carried those carrying the machine against a wall, breaking all the ribs on the bottom plane. When put away it was found that there was one plane intact, with the outriggers, elevator and rudder. No controls were fitted to this glider, and it was found, as a consequence, that the movements of the pilot, within the limits it was possible to move the body, had no appreciable effect whatever on the stability or movements. The work of repairing is well in hand, the frame of the three planes now being completed, they only requiring to be covered, and one or two details. A controllable elevator is also being fitted. With favourable weather it is hoped to have it completed in about a fortnight's time. The hangar is now completed, and will be noticed in the background of the photograph to the left of the club shed. There has also been some good model flying by the various members with single- and twin-propeller models, Messrs. G. Baker and E. Trykle making some high and long flights with singles, and Mr. McManus with a small twin. One of the best tractor models that the club has seen on its flying ground has been brought up by Mr. G. Crooke Rogers, the model rising off the ground and flying about 200 yards. The shape of the main plane is that of a rook, and a non lifting tail, similar to the Nieuport tail minus flaps, is fitted.

Croydon and District Aero Club (Sec., 136A, HIGH STREET).

Monthly Report.—Much valuable work has been done during March by members of this club, and many models have been made; rise-off-ground models seem to have been the favourites, but tractor monoplanes, duration models, and hydroplanes have also received attention. With r.o.g. monoplanes, Messrs. Carter, Smither, Bell, Pavely, Mullins, Young, Stevens and Hart have been notably successful. Messrs. Hart and Carter have had fine duration and high flights with their models, in high winds. Mr. Carter has also had some splendid distance flights with his large r.o.g. monoplane (8½ ozs.), and some very high flights with his small machine (6 ozs.). Mr. Bell has been out for distance, and has had flights off the ground of 300 yards and over; he has also had good duration and altitude. Mr. C. Smither has had many fine flights with his automatic stability biplane, both hand launched and from the ground. Mr. Mullins' biplane has been flying very well, and Messrs. Young and Stevens' pretty r.o.g. monoplanes have also given a very good account of themselves. With tractor monoplanes, Mr. Pavely, as usual, has had very successful results, and Messrs. Bell, Hart, Young and Smither have also had good results. Mr. Hart has had short flights with a tractor biplane. Hydroplanes have been constructed by Messrs. Smither, Bell and Hart. Mr. Smither has not yet tried his, but Mr. Bell's biplane rose from the water at his first attempt and flew away very steadily. Mr. Hart's monoplane met with a sudden end owing to a friendly dog attempting to bring it in from the middle of the pond—the model was practically bitten to pieces. Mr. Jannaway has been over to the Common several times during March, and has had some very fine flights with his models.

E. Grinstead and District (ROSENEATH, WEST HILL, E. GRINSTEAD).

FLYING as usual every Wednesday and Saturday at Mount Noddy and Ashdown Forest at 2.30.

Monthly Report.—A series of weekly lectures has just been inaugurated on "Model Construction," given by the chairman of the club, Mr. H. Smither, Mr. H. Dawson and Mr. H. Smither have also put up prizes for a novices' duration competition. F. Armstrong, 200 yds. with r.o.g. mono., 1-1-Pz type, first attempt, and 350 with hand-launched. H. Smither, 200 yds., r.o.g. tractor mono. Same member is also just completing interesting hydro-biplane, single propeller, and with staggered planes. In course of construction there are three tractor monos., several duration 'buses and a scale Astra biplane. Not a bad month's work for a new club.

Hendon and Districts Model Ae.C. (3, ARGYLE RD., W. HENDON).

FLYING every Saturday and Sunday afternoon at Hendon and Cricklewood. **Monthly Report.**—Excellent work has been done during the past month, despite the unfavourable weather. The exact measurement of the new club distance record, by Lawrence, mentioned in the last report, is 601 yds. He has been flying this model during the month, also various 1-1-Pz types and a r.o.g. biplane. Mr. W. Dingley, a new member, has obtained some good flights with a heavily-loaded tractor mono., with built-up fuselage and wing sections, but the model usually smashes its chassis on landing. Messrs. Hedges and Mitchell have been busy testing various machines, mostly at Cricklewood. They are now getting out, respectively, a heavy tractor monoplane, with geared rubber motor, and a tractor biplane with Caudron type planes. Messrs. Hills and Hayward have been flying single-screw monoplanes, and Mr. Hills especially has had some beautiful flights, terminating with cool glides from good altitudes. Messrs. Hills, jr., Warwick, and Doidge have devoted themselves mainly to monoplanes with tails, "a la Houlberg," and good durations have been obtained. Mr. E. W. Brown has done good work with a 1-1-Pz machine and a single-screw monoplane. The committee would like to know the views of the members with regard to the proposed affiliation with the K. and M.A.A., and would also like to receive any suggestions for competitions. The treasurers would be glad if those members who live at a distance from Hendon would send in subscriptions by post. Secretary would like to receive model catalogues, also price-lists for printing.

Leytonstone and District Aero Club (64, LEYSPRING ROAD.)

FLYING Saturday and Sunday on Wanstead Flats as usual.

Monthly Report.—Probably on account of unfavourable weather, interest seems to have been very lacking last month. Members who have braved the weather have had excellent opportunity of demonstrating the stability of their models. Mr. F. Hawthorn has been flying a small single tractor, and considering the low power (4 strands, ¼ in. strip) this model is very efficient. Launched into the wind it is generally blown hopelessly backward, but occasionally it will turn and then it may be relied on to cover a good distance. Mr. T. Jack's Olympia model is still alive and flies regularly every week-end. Messrs. H. Bedford and F. Grattan have been experimenting with two hydros, one a biplane with the floats arranged one in front and one at each wing tip, the other a single tractor of large span. Of the two the latter proved to be the more successful, probably accounted for by the upward pull of the tractor. The arrangement of the floats on the biplane is very effective, keeping the model right side up on really rough water. The tractor is also good on the surface of the water, but it has not been tested in such rough weather as the biplane. Mr. Geo. Hawthorn has been flying a tractor, and one or two other members have also been out. It is anticipated that a number of models will shortly be exhibited in the shop window of a local tradesman, and now that favourable weather may reasonably be expected, it is hoped members will come up to the scratch rather better than has been the case of late.

Manchester Model Ae.C. (14, WARWICK RD. N., OLD TRAFFORD).

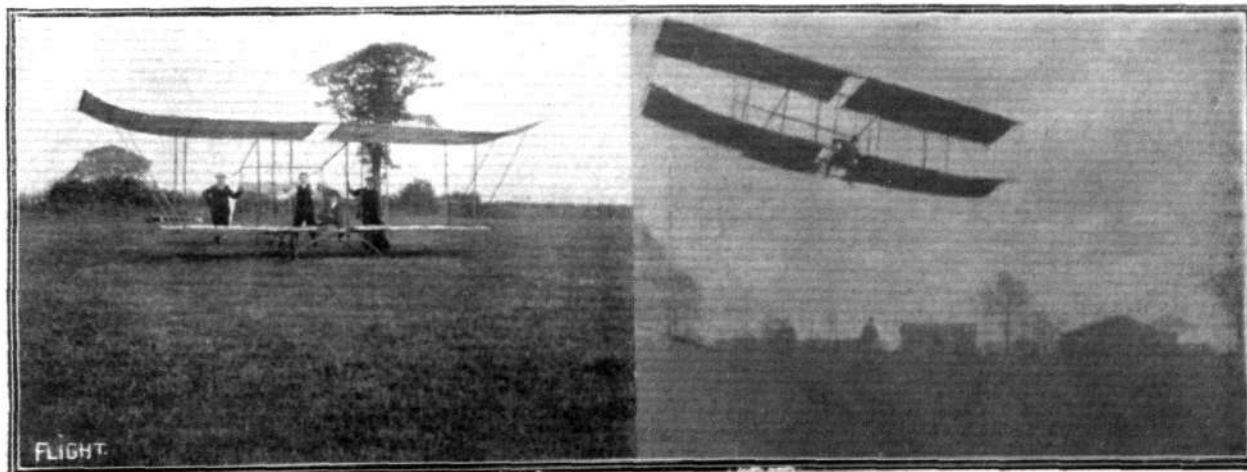
MEETINGS will be held each week during the present month and to-day (Saturday) prizes withheld from the last meeting owing to rain will be competed for.

Monthly Report.—Excellent progress has been made during the past month considering the high winds that have prevailed. Tractors and r.o.g. models have made their first appearance in the club. Mr. Monteiro, whose model has been flying better each week, succeeded in obtaining his 3rd and class certificates, whilst Mr. Hurlston passed for his 3rd class. Messrs. Jackson and Gilbert have had good results with tractors, and Mr. Watson with an r.o.g. (0-1-1 Pz). On Easter Monday a hand-launched duration competition was held, when Mr. Watson succeeded in carrying off the first prize, with Mr. Jackson a good second.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

COMPETITIONS, with prizes, every fine Saturday, no fees.

Monthly Report.—Owing to the weather being mostly wet and windy during March little flying has taken place. At the K. and M.A.A. trials, held in the club's ground on the 15th, a 40 m.p.h. wind was blowing, which no doubt frightened away many would-be competitors. Not so, however, Mr. J. E. Louch (N.E. London Aero Club), who beat both tractor records, undoubtedly a most creditable performance. By Easter Monday the weather had improved and a good flying meeting was held. Results of competitions: Hand-launched duration handicap, 1st, C. C. Dutton, bronze medal, with flight of 67 secs. (scratch); 2nd, A. Rasmussen, 57 secs. (rec. 15 secs.); 3rd, H. Woolley, 50 secs. (rec. 5 secs.). Hand-launched duration (postponed from Saturday): 1st, C. C. Dutton, 46 secs.; 2nd, T. Carter, 44 secs. Tractor, hand-launched: 1st, A. Rasmussen, R.o.g. duration: 1st, C. Levy, with flight of 30 secs. Afterwards club record was beaten with flight of 36 secs. Two new members were elected, Mr. A. Abernethy and Mr. A. Levy. This club is now affiliated to the Kite and Model Aeroplane Association. Chief among the advantages to members being entrance at half fees to the K. and M.A.A. competitions and trials. Any model aero enthusiast wanting to use a large ground, with rise-off board for practice, should join our club without delay.



The Haddon glider of the Birmingham Aero Club at rest and in the air.

Reigate, Redhill and District (8, BRIGHTON ROAD, REDHILL).

Monthly Report.—Since Olympia very little outdoor work has been accomplished, most of the members being engaged on r.o.g. models (biplanes) for the next "Rawson" cup competition (April 19th). Some very fine original machines for this cup are being turned out by Messrs. Norton, M. Wilson, Sutton, Key, Hoyle and Burghope. All these are biplanes weighing over 8 ozs. Mr. Norton's is quite unconventional, and of very "taking" design. The "sausage" torpedo Canard, shown by Mr. W. H. Norton at the "show," is a complete success; does a big distance on very little power. It is beautifully stable, and required practically no adjustment. Several excellent 2-oz. models must be placed to his credit, for they delight in bad weather. Mr. M. H. Wilson out with big 14-oz. r.o.g., terrific speed and heavy loading, and quite a respectable distance. Mr. J. L. Sutton, who builds a great variety of very pretty 1-1-Pz's, has done a good deal of work with 2-oz. and 3-oz. models, and also with a 4-oz. r.o.g. Mr. N. M. Hooton, a comparative novice, has done 350 yds. with a 4-oz. model, his second. A lightly-loaded r.o.g. mono. by him is regarded as a "dark horse" when tuned up. Mr. J. Hoyle has made remarkable progress, and is "in the running" for the Rawson cup with a fine biplane which promises well. He has been out with 6-oz. and 7-oz. r.o.g. monos, which do up to 300 yds. Mr. A. Oram doing 300 yds. with a pretty 4-oz. mono. W. Key flying 7-oz. r.o.g., 2-oz. baby, and his 4-oz. "Olympia" 1-1-Pz which does the "quarter." Mr. J. W. Burghope out several times with a 6-oz. r.o.g. mono., which possesses a very "rigid" type of stability in the highest winds. It rises and falls bodily with the gusts. Tuning up Olympia scale tractor model "Handley Page." Balance good, and will do well with new tractor. Messrs. Norton, Wilson, Key and Burghope all waiting for calmer days for flying their Show tractors, which have been finally tuned up in the workshop.

Scottish Ae.S. ("ROCHELLE," LINESIDE AVENUE, RUTHERGLEN).

Scottish Model Records.

April 5th, r.o.g. competition at Paisley Racecourse; 12th, hydro-aeroplane demonstration at Maxwell Park; 19th, monthly competition at Paisley Racecourse; 26th, hydro-aeroplane competition at Maxwell Park.

Monthly Report.—On March 1st the members visited Paisley Racecourse and had an afternoon's flying under miserable conditions; the competition arranged had to be declared off, and on the 8th March the members visited Maxwell Park, and again competition advertised had to be declared off owing to the weather, and the members put in a number of practice flights. There were lengthy periods between the flights owing to the wind upsetting the models after landing on the water. Later in the evening Mr. Ross made several flights with his single-screw tractor, the best time being 21½ secs., which is new Scottish record for this class. On 15th March the members visited Paisley Racecourse for the monthly competition, but this had to be declared off as it was impossible to launch the models owing to the wind. On 22nd March, the elements being kinder, a brilliant display of hydro-aeroplanes was given at Maxwell Pond before a large attendance of interested spectators, the principal flyers being Messrs. Arthur and Gordon, who had quite a number of brilliant flights, the landings on the water being particularly good. Mr. T. Graham also made several fine flights with his r.o.g. tractor. Messrs. Langlands brought their well-known long-distance "flyer," but lost her on the roof of an adjacent villa at her first flight. The 29th March was really an off day, but Mr. Gordon visited Maxwell Pond and gave a good display of hydro-aeroplanes so as to prevent disappointment. During the month work has progressed favourably in the workshop, the lathe is now in operation, and Mr. Graham is busy experimenting with an engine of unique design; but still the committee have to deplore the want of enthusiasm among the youths of this city, and again appeal for their support, as the work of the club cannot be carried on without it being properly supported. The workshop is open on Tuesdays, Thursdays and Saturdays, from 7.30 to 10 p.m., and assistance will be given, to any members joining, in the making of models.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY).

FLYING will take place at Blackheath, Woolwich, Mitcham, Lee, and Crofton Park at the usual times.

An exhibition will be held in May (about the 20th), and members should proceed with the construction of their show models. Full details of the exhibition will be published in the next monthly report in FLIGHT. The hon. sec. will be pleased to hear from anyone interested in model aviation, and full particulars of membership will be gladly supplied on application being made to the above address.

Monthly Report.—During March members of the S.E.M.Ae.C. have had to contend with the kind of weather usually experienced about this time of the year; nevertheless, a large amount of really good work has been done by the various branches. At Mitcham, Mr. F. Plummer has been obtaining some very good results from an r.o.g. twin-propeller biplane, and a new single-screw tractor hydro-monoplane has made some splendid flights, getting off the water very easily. Mr. L. H. Slatter has been flying his "Olympia Show" self-rising monoplane (illustrated in FLIGHT, dated March 29th), and succeeded in obtaining a flight of 55 secs. off the ground. The average duration of all the flights being 50 secs. Mr. W. J. Williams, with a similar type of model, got average flights of 45 secs. The weight of this model being 7½ ozs., or 1 oz. lighter than Mr. Slatter's machine. Messrs. G. H. Westwood, R. W. Prance, G. R. Eland and W. R. Halnan have been flying their tractor monoplanes, the former especially making some excellent flights under very adverse conditions. At Blackheath, Mr. G. Brown has been particularly active, having flown four different types of models, including his tractor biplane (fitted with a Levasseur-type screw) with which he succeeded in gaining first place in an impromptu competition for tractor models, with a flight of 142 yds. Mr. F. G. Peter, 120 yds., and Mr. R. W. Prance, 118 yds., being second and third respectively. Mr. A. F. Chinnery has been making his usual exhibition flights with his "gull's-wing" tractor monoplane, at the Lee Aerodrome, and Mr. Chinnery has now constructed a much larger model to the same designs, which weighs just over 1 lb. Mr. H. H. Groves has been experimenting with his large steam-driven biplane, but this is not quite up to concert pitch yet. At Kidbrooke, Messrs. C. H. Morgan, E. Campbell and W. Sutton have done good work with both tractor and twin-propeller models. Mr. C. A. Rippon was testing various "wind-sticks" on his Antoinette monoplane. He has also made some splendid flights at Blackheath and Wimbledon with his twin-propeller r.o.g. and hand-launched models, the latter being fitted with swept-back wings with flexible trailing edges. Mr. A. D. Nichols has been flying a tractor biplane and a "floating-tail" racer. Mr. F. Dixon has made some nice flights with his "staggered" biplane, and Mr. L. B. Morris, with a tractor monoplane and single-propeller model, has done well. Mr. W. G. Billinghurst was testing a tractor hydro-biplane at Mitcham, but several modifications were found necessary; and later, successful flights were made with a tractor monoplane, 136 yards being flown at the first attempt, terminating with a glide. Dr. G. I. McMunn has obtained some notable flights with his 4 ft. monoplanes, and also with a large tractor mono., fitted with Etrich-type wings and built-up fuselage. Mr. S. E. Grimstone, with a twin-propeller monoplane, made some good flights at Blackheath, as did Mr. E. Hoch with his tractor, but the tractor

hydro-monoplane was not so successful, it rising from the water easily, but the correct elevation was difficult to obtain. Messrs. W. A. McLaughlin, G. H. Lee, L. Hatfull and A. B. Clark were also flying during the month, and Mr. R. E. Attwooll, with a twin-propeller biplane (low c.g.), made some good flights in half-a-gale. The "South Eastern" trophy, presented by an anonymous donor, will be competed for every three months, the winner to hold the trophy during the following quarter, and will be presented with a commemorative medal. The competition for April-June quarter will be for rubber-driven models, to rise from both land and water, floats and chassis to remain on the models during tests. The weight of models must not be less than 8 ozs., and qualifying flights of 15 secs. off both land and water must be made. Capt. H. F. Wood has been elected president of the S.E.M.Ae.C., and he has kindly granted the members permission to use Messrs. Vickers' Ltd., flying ground at Erith for their experiments with their "power-driven" models, facilities for which are not easily obtainable near town.

Sheffield Model Aero Club (35, PENRHYN ROAD, SHEFFIELD).

THE two cups presented to the club by Mr. E. W. Colver are on exhibition at Scott and Co.'s (corner of The Moor and Carver Street). Meeting, club room, April 6th, 7.30. Flying every Saturday at the Standhouse aerodrome.

Stony Stratford and District Kite and Model Ae.C. (OLD STRATFORD).

Monthly Report.—At a members' meeting, on Feb. 12th, Mr. Wynne was elected an honorary member in appreciation of his services to the club by his presentation of a glider. The glider was brought out the following Saturday when towing practice was held, and it was also found that it will be necessary to fit wheels and seat for use on the club ground. The committee have now revised the competition rules and also arranged for a members' competition at Wolverton, on Saturday, April 19th. Further particulars at the next meeting. A meeting was held on March 26th, at clubroom, the subject for discussion being "Models at Olympia," introduced by the secretary. Those members who had visited the exhibition expressed their regret that the club did not exhibit. The following gentlemen were elected vice-presidents: Capt. L. C. Hawkins and Rev. S. Chesire. Members please note that the next meeting will be held on Wednesday, April 16th, when a draft of the programme for new session will be submitted by the committee.

Windsor Model Aero Club (10, ALMA ROAD, WINDSOR).

Monthly Report.—The flying during the past month has been of a varied and interesting nature, and, from the enthusiasm displayed, the prospects of the club are exceedingly bright. The consistently good flying of Mr. E. A. Dowsett's tractor has caused a general reversion to this type, and it is expected that quite a number will soon be ready for testing. The model in question has been in constant use for two months, and is a practical example of what good workmanship and thoughtful designing can do. Mr. S. Camm has been flying a 5-ft. racing monoplane. A hollow spar forms the basis of the construction, the type being tail-behind. The model has accomplished some fine duration flights, flying very high. F. Camm has been flying a r.o.g. monoplane similar to Mr. Twining's Wakefield Cup winner. Mr. S. Barton has constructed a tractor of "Avro" design, which is undergoing its trials. E. Stanbrook has flown a tractor monoplane. He has also brought out the tractor biplane, with double surfaced planes, covered in, built up fuselage, which excited such favourable comment at "Olympia." The model glides well, and is gradually being tuned up. Mr. A. Eldridge has constructed various models, and is working on an engine. As the workmanship of the models is equal to any in the club, it is a pity that they are not brought out more frequently, as the flying is the true test of any model. On Easter Monday, a hydro meeting was held on the pond in the club's ground, at the Home Park Aerodrome. There were present a tractor hydro, by Mr. Dowsett, and two tail-behinders. Some short flights were made, and invaluable experience gained. S. Camm and S. Barton, who flew the latter models, have found that the punt-like floats require much more power to get off than do the true hydroplane type. The glider has at last been thoroughly wrecked. It was taken out in a gale, and, unfortunately, some of the members lost control of one of the halves. It blew away until it absolutely collapsed. The club are of opinion that it is advisable to build a more advanced type, so are starting on a controlled glider of the 0-2-1 type. Further details will appear later.

Woolwich and District Aero Club (10, ETON RD., WOOLWICH).

A GRAND benefit concert was held at the A.S.E. Institute, on March 27th, with a view to forming an aero club in the local district. The chair was taken by P. G. Cox, Esq., hon. sec. Woolwich and District Aero Club. Mr. W. Barnfather (Carney), as stage manager, made the evening a grand success, with the assistance of the following local artists: The Four Rags, Hermalin, in up-to-date sleight-of-hand tricks, Miss Rosie Weston, Mr. Lal Leslie, Mr. Archie Dale, Mr. F. Ray, Mr. Archie Brown, The Weston Ragtimers, Mr. P. H. Luff, Mr. Will Colyer; Miss D. Clark was the pianist for the evening, and played with great effect. During the interval a practical demonstration in flying was given by the secretary, with a model constructed on the latest lines, with great success, and tended to show what an interesting hobby model aeroplaning is. Many thanks are due to those who assisted as stewards, and who fulfilled their duties splendidly. The secretary of the above club will be pleased to furnish any particulars to intending members who wish to join.



[Correspondence, &c., held over.—ED.]

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